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AGE, SEX, AND SIZE COMPOSITION OF PACIFIC HERRING

FROM COASTAL SPAWNING SITES IN THE ARCTIC-YUKON-KUSKOKWIM REGION, 1996



By

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ABSTRACT

During their 1996 spring spawning migration, Pacific herring, *Clupea pallasii*, were sampled from seven of the eight commercial fishing districts within the Arctic-Yukon-Kuskokwim (AYK) Region of the Bering Sea. Between 6 May and 13 June, 16,270 herring were sampled for age, sex, and size information. Samples were collected using variable-mesh gillnets operated by Alaska Department of Fish and Game personnel and from commercial gillnet, commercial beach seine harvest and subsistence gillnet harvests. Overall, age-8 was the predominant age class in the run, 30.4% by weight and the population, 27.8% by number. With the exception of Goodnews Bay, recruitment was weaker than in 1995 in all Kuskokwim districts where recruits, ages 2 through 5, comprised 23% to 29% of the return in numbers of fish. Goodnews Bay recruits represented 28% of the return, which is a slight increase over 1995. Relatively little recruitment was observed in either the Norton Sound (18%) or Cape Romanzof (13%) Districts. The total biomass in all AYK Districts combined was 61,822 tons and the total harvest was 12,081 tons, for an overall exploitation rate of 19.5%. The mean length within each age class generally decreased northward from Security Cove to Norton Sound. In most samples, males were slightly more abundant than females.

KEY WORDS: Pacific herring, *Clupea pallasii*, Bering Sea, age, sex, size, biomass, population, commercial fishery

INTRODUCTION

The age, sex, and size composition data collected from Pacific herring, *Clupea pallasii*, in the Arctic-Yukon-Kuskokwim (AYK) Region of the Bering Sea is used to assess stock status, gain knowledge of population dynamics, formulate management plans, and facilitate inseason management decisions. The Alaska Department of Fish and Game (ADF&G) has conducted similar studies annually since 1976 (McBride et al. 1981; McBride and Whitmore 1981; Fried et al. 1982a, 1982b, 1983a, 1983b, 1984; Lebida et al. 1985, 1986; Lebida 1986; Lebida and Sandone 1987; Kerkvliet and Hamner 1993a, 1993b, 1993c, 1994a, 1994b; Kerkvliet 1994, 1995; Kerkvliet and Gray 1997).

The coastal waters of Alaska from Cape Newenham to Cape Prince of Wales composed the study area (Figure 1). There are eight regulatory commercial fishing districts within the AYK Region: Security Cove, Goodnews Bay, Cape Avinof, Nelson Island, and Nunivak Island Districts are located within the Kuskokwim Area whereas Cape Romanzof, Norton Sound, and Port Clarence Districts are located within the Bering Sea-Kotzebue Area. Norton Sound is divided into seven subdistricts (Figure 2). AYK herring districts are identified and described in ADF&G (1996).

METHODS

Sampling Techniques

Samples were taken from the Security Cove, Goodnews Bay, Cape Avinof, Nelson Island, Nunivak Island, Cape Romanzof, and Norton Sound (St. Michael, Unalakleet, and Cape Denbigh Subdistricts) commercial fishing districts. No age composition data was collected in the Port Clarence District because there has been no commercial sac roe fishery or test fishing there since 1988.

Variable-mesh gillnets, consisting of 1.5 in, 2.0 in, 2.5 in, and 3.0 in mesh panels, were used to sample the population because they are assumed to sample age classes in proportion to their abundance. Gillnets are the only legal gear in the AYK Region with the exception of Norton Sound where a portion of the harvest is taken by beach seine. In the Kuskokwim herring districts, commercial samples were collected from gillnets with mesh sizes ranging from 2 1/2 to 3 1/4 in. Samples were also collected from the Nelson Island subsistence fishery. In the Cape Romanzof and Norton Sound Districts, commercial samples were collected from nets with mesh sizes ranging from 2 3/4 to 3 1/4 in and from 2 7/8 to 3 1/4 in respectively.

Data collection methods were similar to those described by Barton and Steinhoff (1980). Length, weight, sex, gonad weight, and gonad maturity index data were measured for all herring sampled from each gear type. Fish were measured to the nearest millimeter, weighed to the nearest gram, and aged by counting scale annuli viewed with a microfiche reader. Sample size goals were based on the methods of Thompson (1987). We attempted to sample at least 420 herring from each commercial gear type in each district or subdistrict per week. The commercial catch sample was

collected from at least ten boats when possible. The sample goal for VMG net catches was sixty fish per day. Variable-mesh gillnets were fished for short durations to avoid saturating any one mesh size with fish. An effort was made each day to sample fish from several schools to promote representative sampling of the run.

Estimation of Biomass Age Composition

Aerial surveys were flown in each district to estimate herring biomass, spawn timing, and spawn distribution. Aerial survey procedures followed those outlined by Lebida and Whitmore (1985). Pre-season projections, spawn deposition, and commercial and VMG fish catch rates were used to estimate the biomass in districts where survey conditions precluded an accurate assessment.

The method used to estimate the age composition of the run biomass and escapement biomass differed between districts. For the Security Cove, Goodnews Bay, Cape Avinof, and Nunivak Island Districts, the age composition of the run biomass was estimated from variable-mesh gillnet catches. The Age composition of the escapement biomass was estimated by subtracting the harvest from the run biomass for each age class. For the Cape Romanzof, Norton Sound, and Nelson Island Districts, the age composition of the escapement biomass was estimated from variable-mesh gillnet catches. The age class composition of the run biomass was estimated by combining harvests with escapement biomass for each age class. For each district, the number of herring in the run, harvest, and escapement for a given age class was converted from tons using age-specific average weights of fish sampled from variable-mesh gillnets and commercial and subsistence harvests.

RESULTS AND DISCUSSION

ADF&G personnel examined 16,270 Pacific herring between 6 May and 13 June. The age, sex, and size data collected from herring sampled during this time are summarized in Appendices A.1 - A. 22. The age composition of variable-mesh gillnet catches for all districts excluding Cape Avinof and Nelson Island, suggests that age 6 and older herring arrived and spawned earlier in the season than younger herring (Figure 3). This temporal spawning segregation has been observed in previous years (McBride et al. 1981; Fried et al. 1982a, 1982b, 1983a, 1983b, 1984; Kerkvliet and Hamner 1993a, 1993b, 1993c, 1994a, 1994b; Kerkvliet 1994, 1995; Kerkvliet and Gray 1997).

The herring biomass was assessed to be 61,822 tons in 1996. The herring biomass was distributed among the districts as follows: 11.1% in Security Cove, 10.2% in Goodnews Bay, 7.3% in Cape Avinof, 10.7% in Nelson Island, 6.8% in Nunivak Island, 9.7% in Cape Romanzof, and 44.2% in Norton Sound (Figure 4).

The commercial harvest was 11,986 tons for an overall exploitation rate of 19.4% (Table 1). Gillnet fisheries accounted for most of the harvest. Norton Sound typically accounts for 50% to 75% of the AYK harvest. In 1996, the Norton Sound beach seine fishery took 4.9% and the commercial gillnet

fishery accounted for 47.0% of the AYK harvest (Figure 5). The additional 48.1% of the AYK commercial harvest was taken with commercial gillnets in the Security Cove (15.5%), Goodnews Bay (10.0%), Cape Avinof (6.8%), Nelson Island (8.6%), Nunivak Island (0.8%), and Cape Romanzof (6.3%) Districts. There has not been a commercial sac roe fishery in the Port Clarence District since 1988 because buyers have not been present in the district. There is a small bait fishery in the Port Clarence District which typically accounts for less than 0.1% of the AYK harvest.

For most districts, the large recruitment observed in 1981 and 1982 was followed by nine years of reduced recruitment (Figure 6, 7). In 1992 and 1993 a substantial recruitment of herring was again observed in the Security Cove, Goodnews Bay, Nelson Island, Nunivak Island, and Norton Sound Districts (Figure 6, 7). With the exception of Goodnews Bay, the 1996 recruitment was weaker than in 1995 in all Kuskokwim districts, where recruits comprised 23% to 29% of the return in numbers of fish. Goodnews Bay recruits represented 28% of the return, which is a slight increase over 1995. Relatively little recruitment was observed in either the Norton Sound or Cape Romanzof Districts (18% and 13%, respectively).

Age-8 was the predominant age class in the AYK run biomass (30.4%) and population (27.8%; Tables 1, 2; Figures 9, 10). Age-9 and older herring accounted for 39.2% of the biomass and 28.9% of the population. Recruits represented 12.2% of the biomass and 21.2% of the population. In the AYK commercial harvest, age-8 and -9 herring dominated the biomass (34.5% and 19.6%, respectively).

In the Security Cove District, age-8 and -9 were the predominant age classes in the biomass (47.3%) and in the population (38.8%, Tables 1, 2; Figures 8, 10). In this district, 42.4% of the biomass and 30.0% of the population were represented by age-9 and older herring. Recruits represented 12.6% of the biomass and 24.7% of the herring population (Figure 11). Age-8 herring represented 34.0% of the commercially harvested biomass.

In the Goodnews Bay District age-8 and -9 herring dominated the biomass (43.1%) and age-5 and -8 herring dominated the population (44.0%; Tables 1, 2; Figures 8, 10). Age-9 and older fish accounted for 41.5% of Goodnews Bay biomass and 30.7% of the population. Recruits composed 18.0% of the biomass and 28.5% of the population (Figure 11). Age-8 herring represented 31.7% of the commercial harvest biomass.

Age-8 was the dominant age class in the Cape Avinof biomass (24.4%), however age-6 was the dominant age class in the population (22.6%; Tables 1, 2; Figures 8, 10). Age-9 and older fish accounted for 29.9% of the biomass and 20.0% of the population. Recruits represented 18.6% of the biomass and 28.9% of the population (Figure 11). Ages -8, -9, -11, and -12 herring accounted for 79.4% of the commercial harvest, ranging from 16.4 to 24.8%.

In the Nelson Island District, age-8 was the predominant age class in the biomass (22.6%), however, age-6 and -8 were the dominant age classes in the population (20.4% and 21.1% respectively; Tables 1, 2; Figures 8, 10). Age-9 and older herring accounted for 44.8% of the biomass and 31.6% of the population by number. Recruits represented 13.7% of the biomass and

23.4% of the population (Figure 11). Age-9 and older herring composed 74.0% of the commercial catch.

Age-6 and -8 were the dominant age classes in the Nunivak Island biomass (22.8% and 23.5%, respectively) and age-6 was the dominant age class in numbers of fish (27.6% ; Tables 1, 2; Figures 9, 10). Age-9 and older fish accounted for 31.4% of the biomass and 20.7% of the population. Recruits represented 16.1% of the biomass and 25.3% of the population (Figure 11). Age-8 herring accounted for 20.4% of the commercial catch biomass. Age-9 and older herring represented 73.3% of the commercial catch biomass.

In the Cape Romanzof District, age-8 was the dominant age class in biomass (30.8%) and in numbers of fish (30.6%); Tables 1, 2; Figures 9, 10. Age-9 and older herring accounted for 48.4% of the biomass and 39.6% of the population. Recruits composed 7.4% of the biomass and 12.9% of the population (Figure 11). Age-8 herring composed 24.1% of the commercial harvest.

Age-8 was the largest age class in the Norton Sound biomass (37.2%) and in numbers of fish (34.4% ; Tables 1, 2; Figures 9, 10). Age-9 and older herring represented 37.3% of the biomass and 28.2% of the population. Recruits represented 9.9% of the biomass and 17.7% of the population (Figure 11). Age-8 herring accounted for 41.5% of the commercial catch.

Throughout the region, mean length by district within age classes generally decreased (NSC) in a southerly to northerly direction (Figure 12). This trend parallels those noted in previous years (Lebida et al. 1985, 1986; Lebida and Sandone 1986; Kerkvliet and Hamner 1993a, 1993b, 1993c, 1994a, 1994b; Kerkvliet 1994, 1995; Kerkvliet and Gray 1997).

Overall, percentages of males and females remained fairly equal, with males slightly outnumbering females. In 1996, the percentages of male herring captured in variable-mesh gillnets were as follows: 54.4 in Security Cove, 53.8 in Goodnews Bay, 46.1 in Cape Avinof, 48.7 in Nelson Island, 52.8 in Nunivak Island, 53.3 in Cape Romanzof, 56.6 in Norton Sound, and 52.6 for all AYK districts combined. The percentages of males in the Norton Sound commercial beach seine harvest was 54.9, and 44.4 in the AYK combined commercial gillnet harvest.

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Table 1. Age composition of Pacific herring spawning biomass for the run, harvest, and escapement for districts within the Arctic-Yukon-Kuskokwim Region, Alaska, 1996.

Age	Security Cove		Goodnews Bay		Cape Avinof		Nelson Island		Nunivak Island		Cape Romanzof		Norton Sound		Arctic-Yukon-Kuskokwim	
	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons
Run																
2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
3	0.2	15	0.1	3	0.7	32	0.7	47	0.2	8	0.3	20	0.2	62	0.3	186
4	3.6	244	3.3	207	3.4	151	2.1	137	2.0	83	0.7	41	0.3	75	1.5	938
5	8.8	606	14.7	928	14.5	652	10.9	722	13.9	585	6.4	385	9.4	2,562	10.4	6,440
6	12.2	841	9.7	610	19.7	884	15.7	1,046	22.8	956	10.5	632	8.5	2,313	11.8	7,281
7	8.7	599	6.5	412	7.5	338	3.2	215	6.2	261	2.9	171	7.1	1,948	6.4	3,944
8	24.0	1,648	24.3	1,533	24.4	1,096	22.6	1,501	23.5	986	30.8	1,847	37.2	10,163	30.4	18,773
9	23.3	1,597	18.8	1,187	11.5	518	15.1	1,004	9.2	388	17.1	1,025	9.9	2,715	13.6	8,434
10	2.1	147	4.2	264	4.6	209	4.2	278	2.9	122	6.4	387	10.3	2,815	6.8	4,221
11	3.5	237	7.4	467	5.4	244	6.6	437	3.7	155	5.7	339	5.9	1,608	5.6	3,487
12	5.0	345	3.9	247	4.4	198	8.2	547	5.1	213	11.7	702	6.4	1,754	6.5	4,006
13+	8.6	588	7.2	456	3.9	177	10.6	705	10.5	440	7.5	452	4.7	1,292	6.6	4,110
Total	100.0	6,867	100.0	6,315	100.0	4,500	100.0	6,638	100.0	4,195	100.0	6,000	100.0	27,307	100.0	61,822
Harvest																
2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
3	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
4	0.0	0	0.0	0	0.0	0	0.1	1	0.0	0	0.0	0	0.0	0	0.0	1
5	0.0	0	0.5	6	0.2	1	1.4	15	0.1	0	0.0	0	0.7	46	0.6	68
6	1.0	18	3.2	38	2.4	19	4.2	47	2.5	3	2.0	15	1.8	113	2.1	252
7	5.3	99	4.2	50	3.4	27	1.8	21	2.4	2	0.8	6	5.4	334	4.5	540
8	34.0	632	31.7	382	20.6	169	18.5	209	20.4	21	24.1	182	41.5	2,579	34.5	4,172
9	32.2	599	20.5	247	24.8	204	21.4	240	12.0	12	19.5	147	14.8	922	19.6	2,371
10	5.4	100	5.9	71	6.2	51	8.1	92	3.2	3	8.4	63	11.9	741	9.3	1,121
11	6.0	111	11.9	144	16.4	134	11.9	133	8.2	8	9.0	67	11.2	697	10.7	1,296
12	8.5	158	11.4	137	17.6	144	15.0	169	15.1	15	17.4	131	7.8	486	10.3	1,241
13+	7.7	143	10.7	129	8.5	70	17.6	198	36.1	36	18.8	141	4.8	300	8.4	1,018
Total	100.0	1,859	100.0	1,204	100.0	820	100.0	1,125	100.0	101	100.0	752	100.0	6,220	100.0	12,081
Escapement																
2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
3	0.3	15	0.1	3	0.9	32	0.8	47	0.2	8	0.4	20	0.3	62	0.4	186
4	4.9	243	4.0	207	4.1	151	2.5	135	2.0	83	0.8	41	0.4	75	1.9	936
5	12.1	605	18.0	922	17.7	651	12.8	707	14.3	585	7.3	385	11.9	2,516	12.8	6,370
6	16.4	821	11.2	572	23.5	865	18.1	999	23.3	953	11.8	617	10.4	2,200	14.1	7,027
7	10.0	498	7.1	362	8.4	310	3.5	194	6.3	258	3.1	165	7.7	1,614	6.8	3,402
8	20.2	1,013	22.5	1,151	25.2	927	23.4	1,292	23.6	965	31.7	1,666	36.0	7,584	29.3	14,598
9	19.9	994	18.4	940	8.6	315	13.9	764	9.2	375	16.7	878	8.5	1,792	12.2	6,060
10	0.9	47	3.8	193	4.3	158	3.4	186	2.9	119	6.2	323	9.8	2,074	6.2	3,100
11	2.5	126	6.3	324	3.0	109	5.5	304	3.6	146	5.2	272	4.3	911	4.4	2,191
12	3.7	186	2.1	110	1.5	54	6.9	378	4.8	197	10.9	571	6.0	1,268	5.6	2,765
13+	9.2	459	6.4	327	2.9	107	9.2	507	9.9	403	5.9	311	4.7	992	6.2	3,107
Total	100.0	5,008	100.0	5,111	100.0	3,680	100.0	5,513	100.0	4,094	100.0	5,248	100.0	21,087	100.0	49,742

* Includes subsistence harvest of 95 tons.

Table 2. Age composition of Pacific herring spawning abundance, number of fish for districts within the Arctic-Yukon-Kuskokwim Region, Alaska, 1996.

Age	Security Cove	Goodnews Bay	Cape Avinof	Nelson Island	Nunivak Island	Cape Romanzof		Norton Sound	Arctic-Yukon Kuskokwim
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.7	0.2	1.9	1.9	0.5	1.0	1.0	0.7	0.9
4	7.8	6.1	6.1	4.0	3.6	1.4	1.4	0.6	3.2
5	16.1	22.2	20.9	17.4	21.2	10.5	10.5	16.3	17.1
6	15.5	12.2	22.6	20.4	27.6	13.7	13.7	11.9	15.4
7	8.4	6.9	7.5	3.5	6.0	3.3	3.3	7.8	6.8
8	21.3	21.8	21.0	21.1	20.4	30.6	30.6	34.4	27.8
9	17.5	15.4	8.5	12.3	7.1	15.5	15.5	8.3	11.1
10	1.5	3.1	3.2	3.2	2.0	5.7	5.7	8.1	5.2
11	2.4	5.3	3.4	4.5	2.4	4.4	4.4	4.3	4.0
12	3.3	2.6	2.7	5.3	3.1	8.8	8.8	4.4	4.3
13+	5.4	4.4	2.2	6.3	6.0	5.2	5.2	3.1	4.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

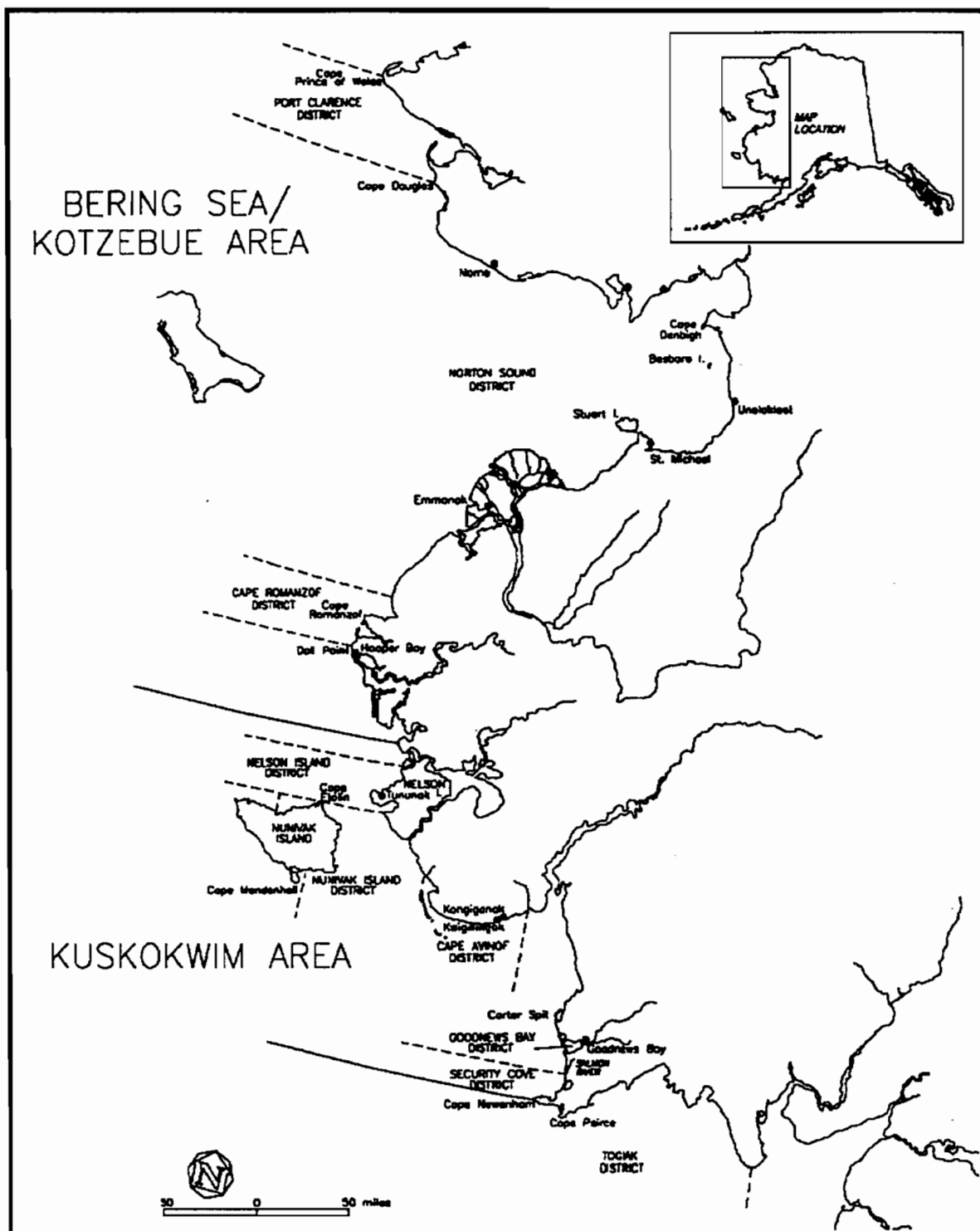


Figure 1. Commercial herring fishing districts within the Arctic-Yukon-Kuskokwim Region, Alaska, 1996.

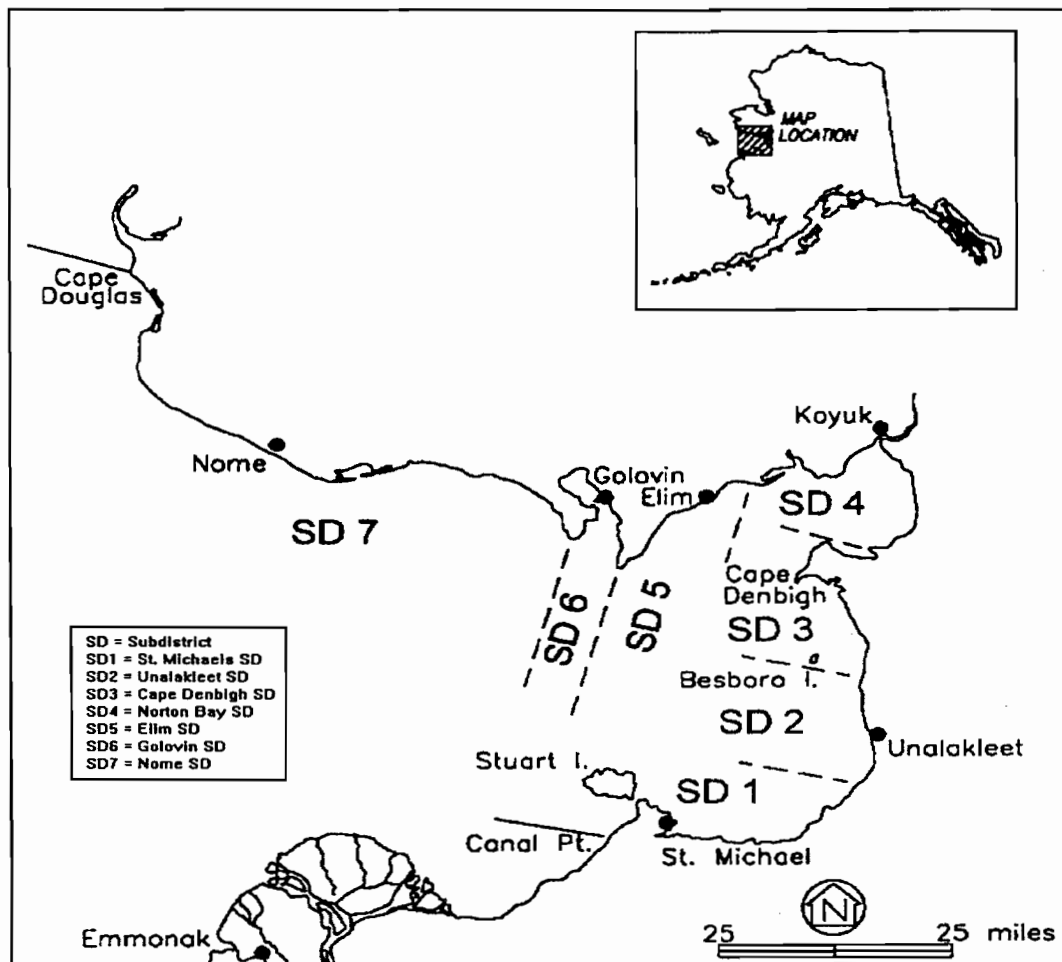
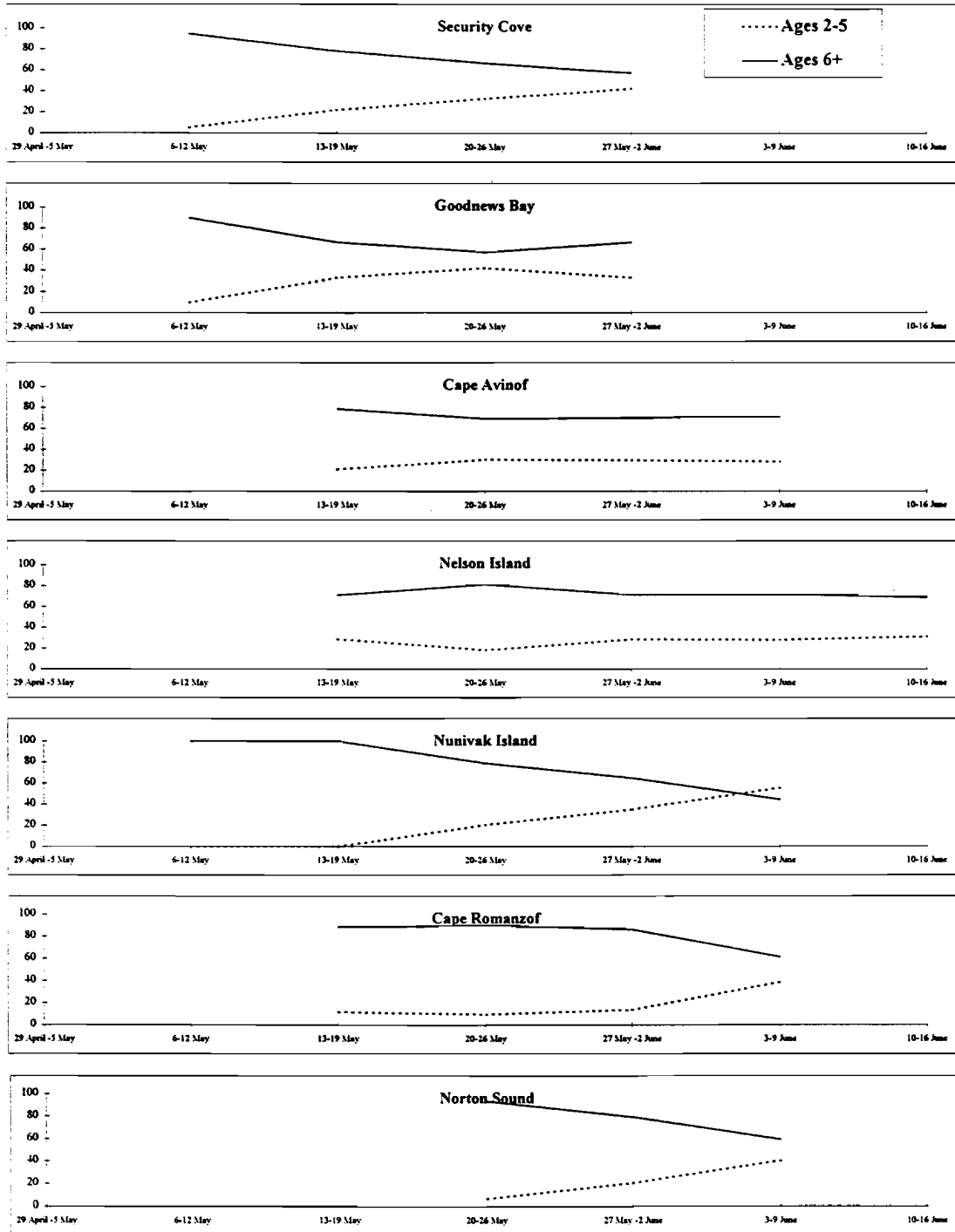


Figure 2. Commercial herring fishing districts and subdistricts of Norton Sound, Arctic-Yukon-Kuskokwim Region, Alaska, 1996.

Percent by Number



Sample Week

Figure 3. Spawning time comparison (based on variable-mesh gillnet data) of Pacific herring grouped by ages 2 to 5 and age 6 and older for districts within the Arctic-Yukon-Kuskokwim Region, Alaska, 1996.

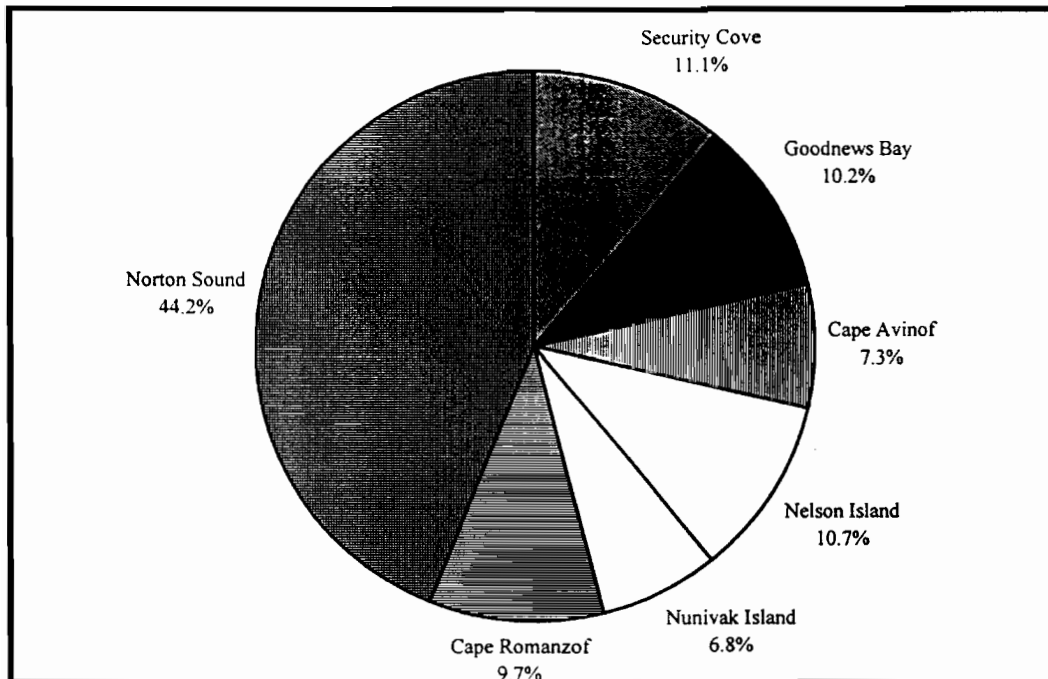


Figure 4. Pacific herring run biomass by fishing district, Arctic-Yukon-Kuskokwim Region, Alaska, 1996.

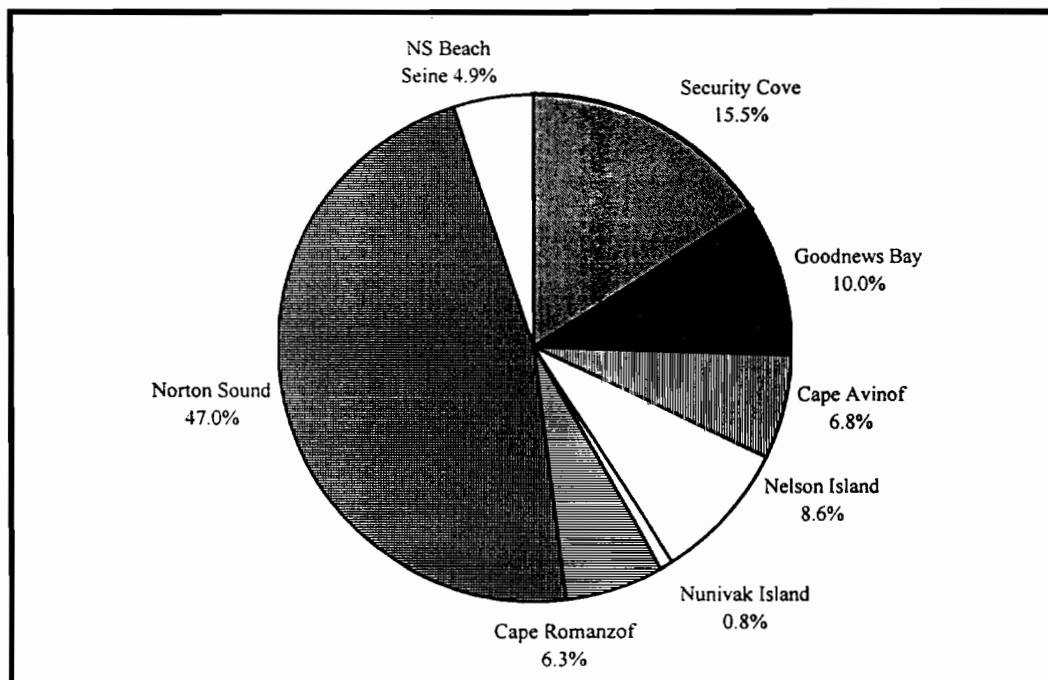


Figure 5. Pacific herring commercial harvest by fishing district, Arctic-Yukon-Kuskokwim Region, Alaska, 1996.

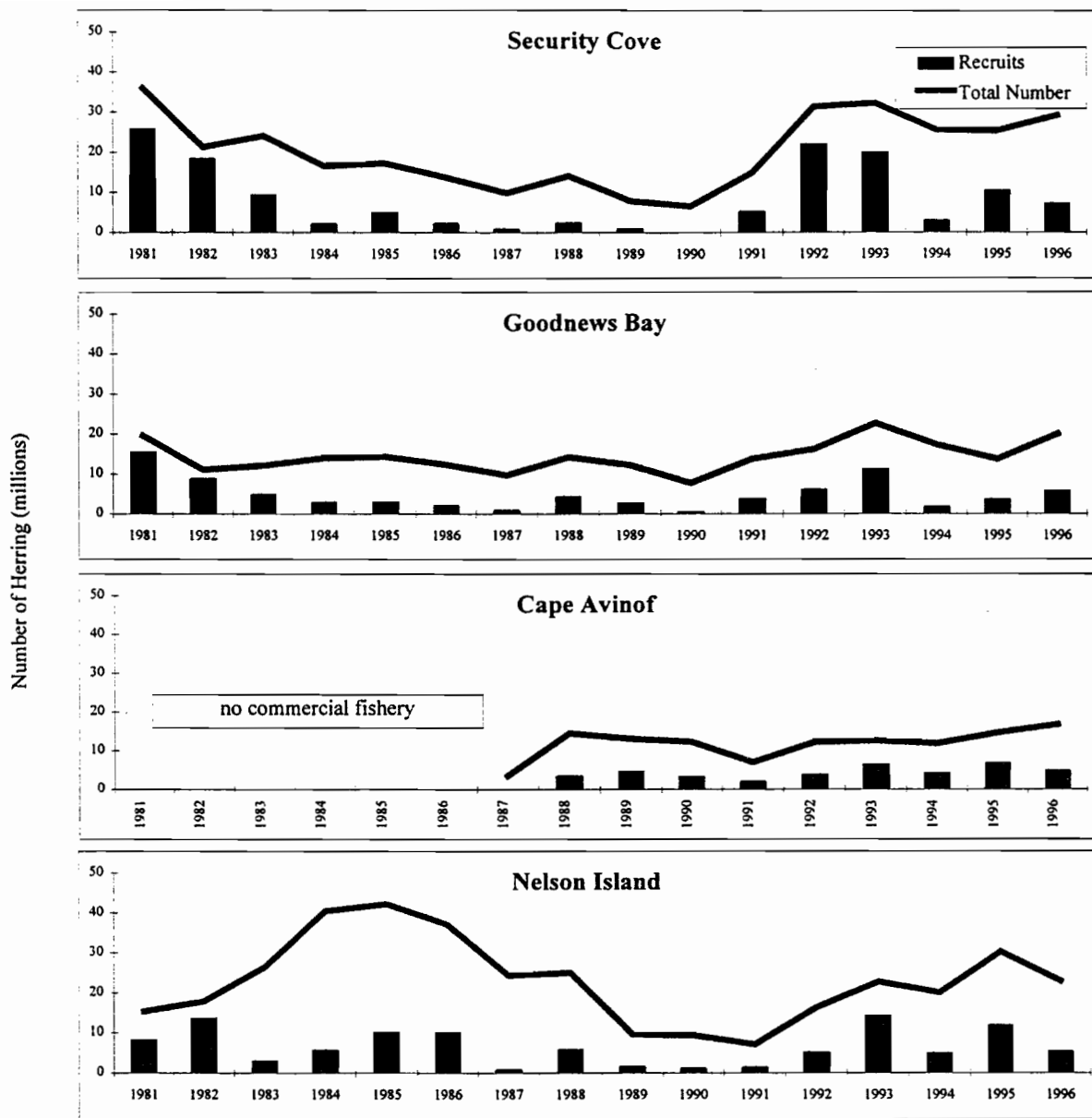


Figure 6. Pacific herring recruits, ages 2 through 5, compared to the total population from 1981 through 1996 for Security Cove, Goodnews Bay, Cape Avinof, and Nelson Island Districts within the Arctic-Yukon-Kuskokwim Region, Alaska,

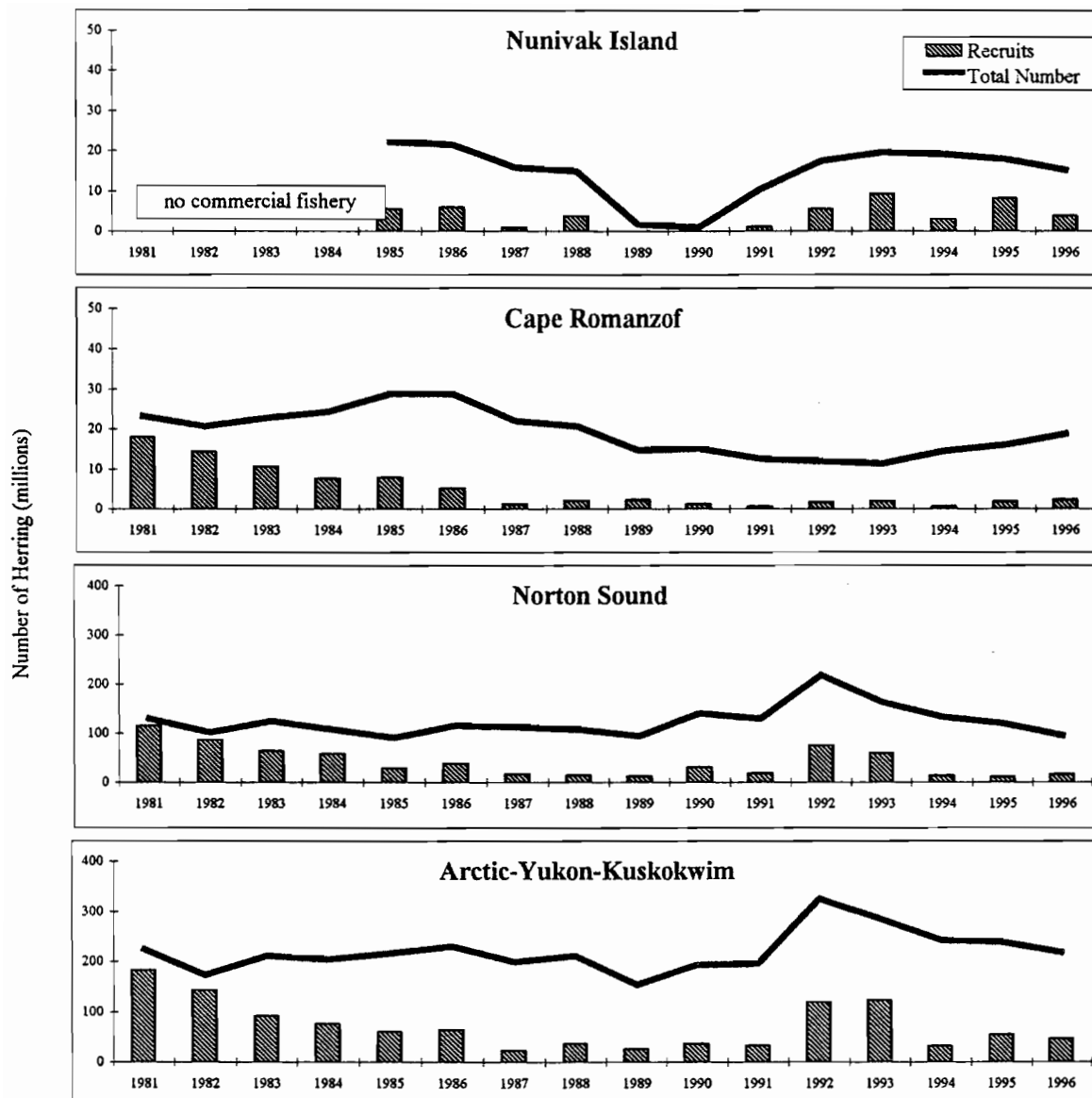


Figure 7. Pacific herring recruits, ages 2 through 5, compared to the total population from 1981 through 1996 for Nunivak Island, Cape Romanzof, and Norton Sound Districts, and the combined Arctic-Yukon -Kuskokwim Region,

Weight (tons)

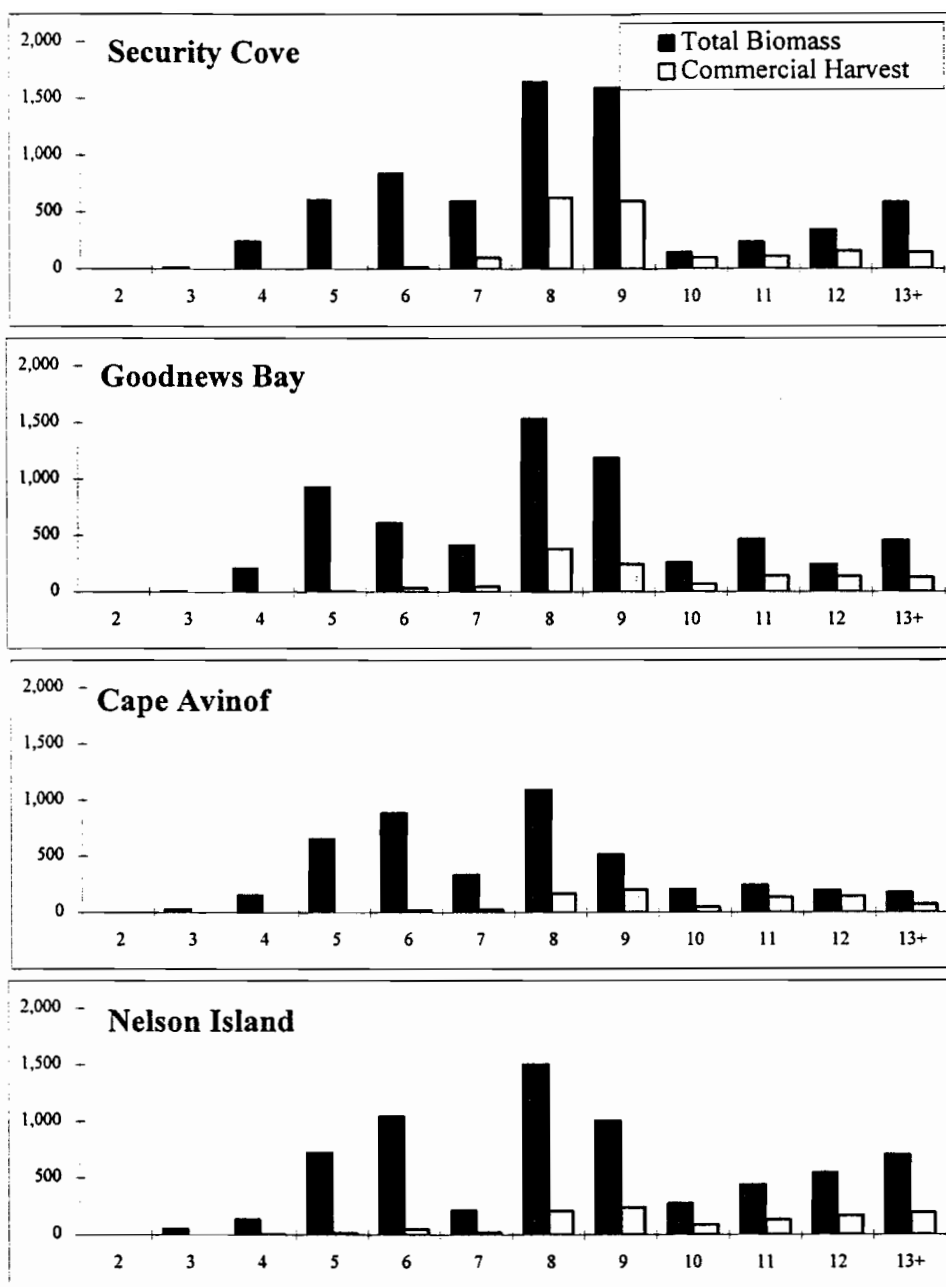


Figure 8. Age composition of Pacific herring for the run and harvest for the Security Cove, Goodnews Bay, Cape Avinof, and Nelson Island Districts within the Arctic-Yukon-Kuskokwim Region, Alaska, 1996.

Weight (tons)

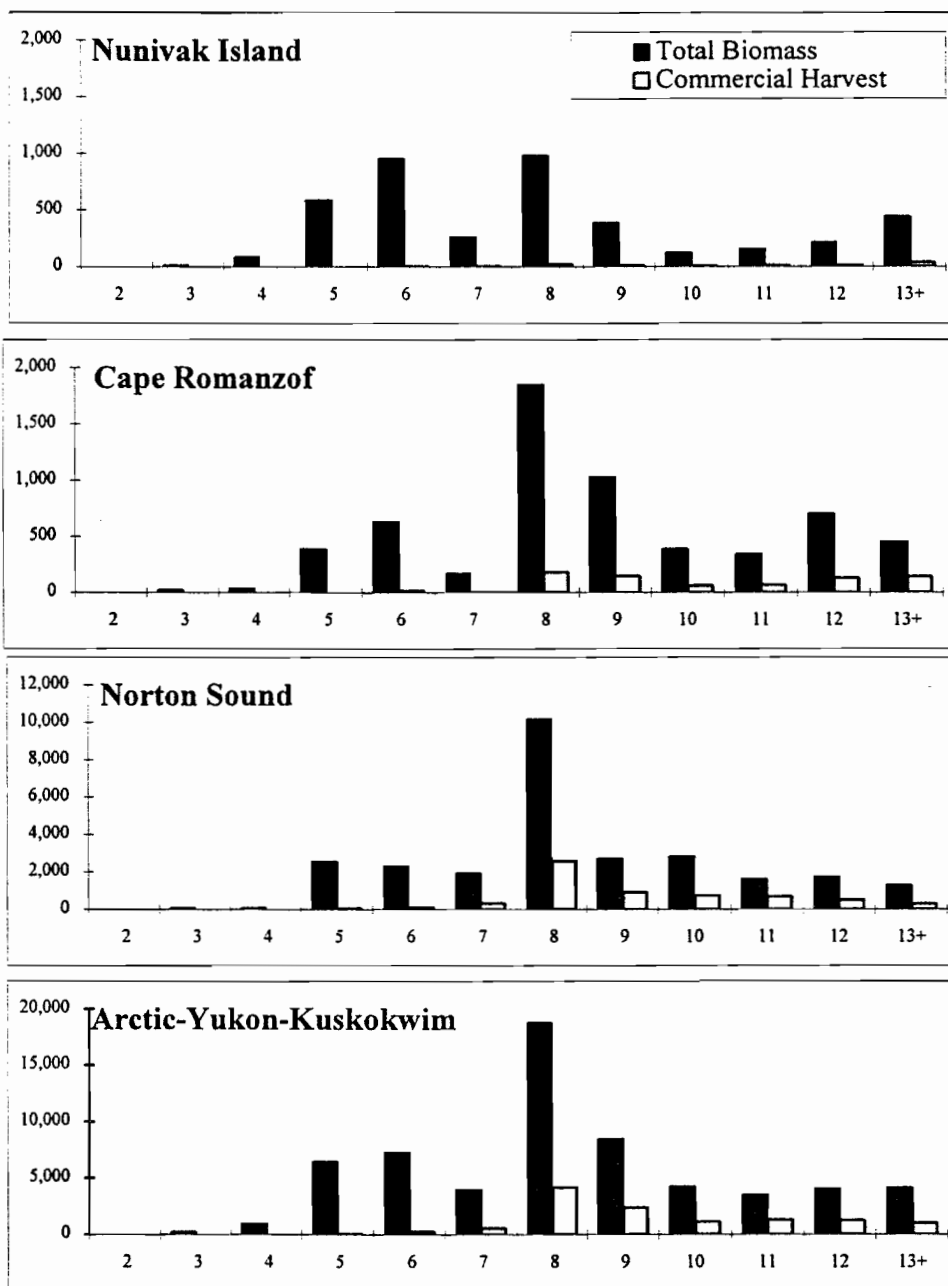


Figure 9. Age composition of Pacific herring for the run and harvest for the Nunivak Island, Cape Romanzof, and Norton Sound Districts, and the combined Arctic-Yukon-Kuskokwim Region, Alaska, 1996.

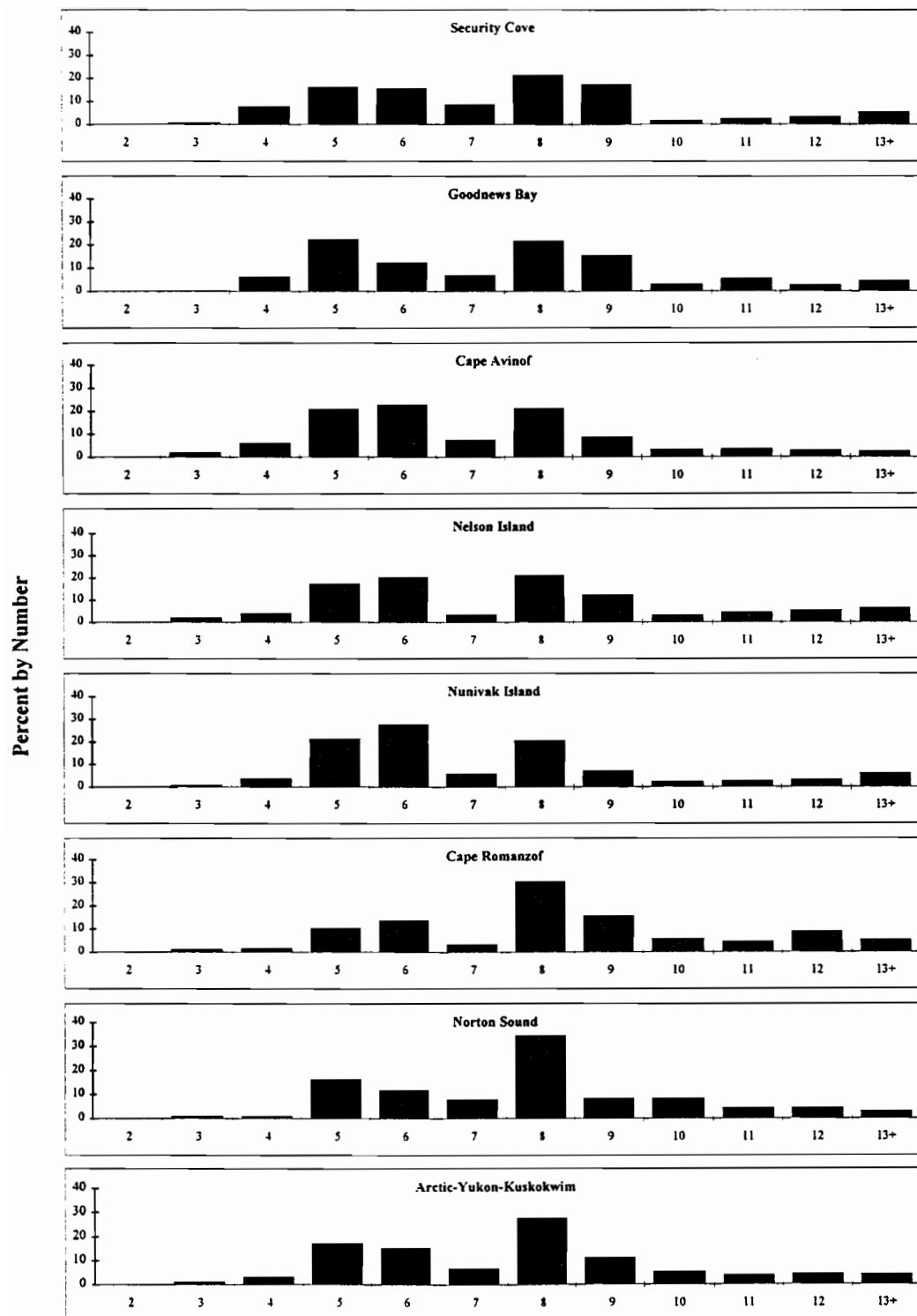


Figure 10. Age composition of Pacific herring spawning populations for commercial fishing districts within the Arctic-Yukon-Kuskokwim Region, Alaska, 1996.

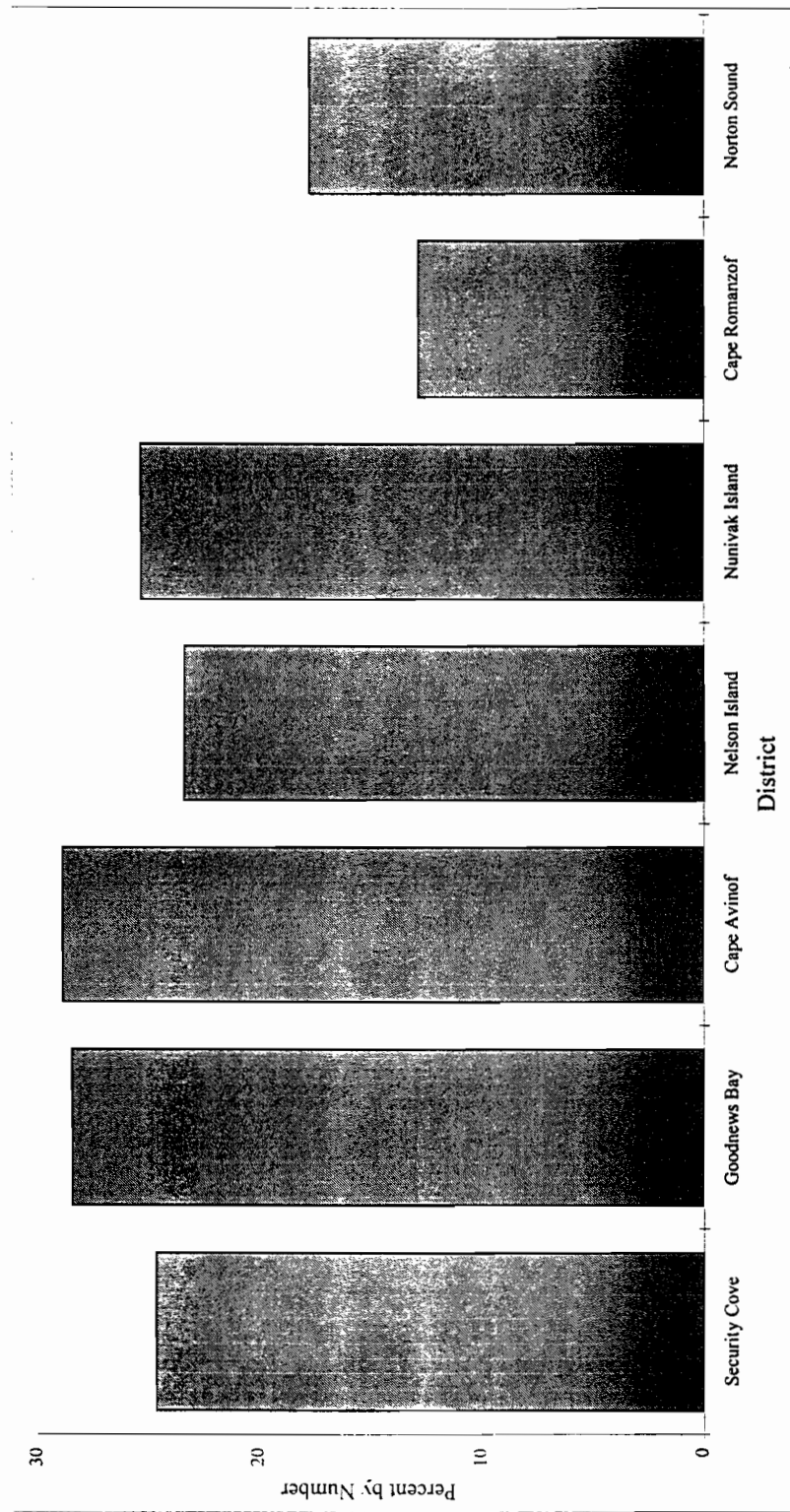


Figure 11. Pacific herring recruits (ages 2 through 5) for commercial fishing districts within the Arctic-Yukon-Kuskokwim Region, Alaska, 1996.

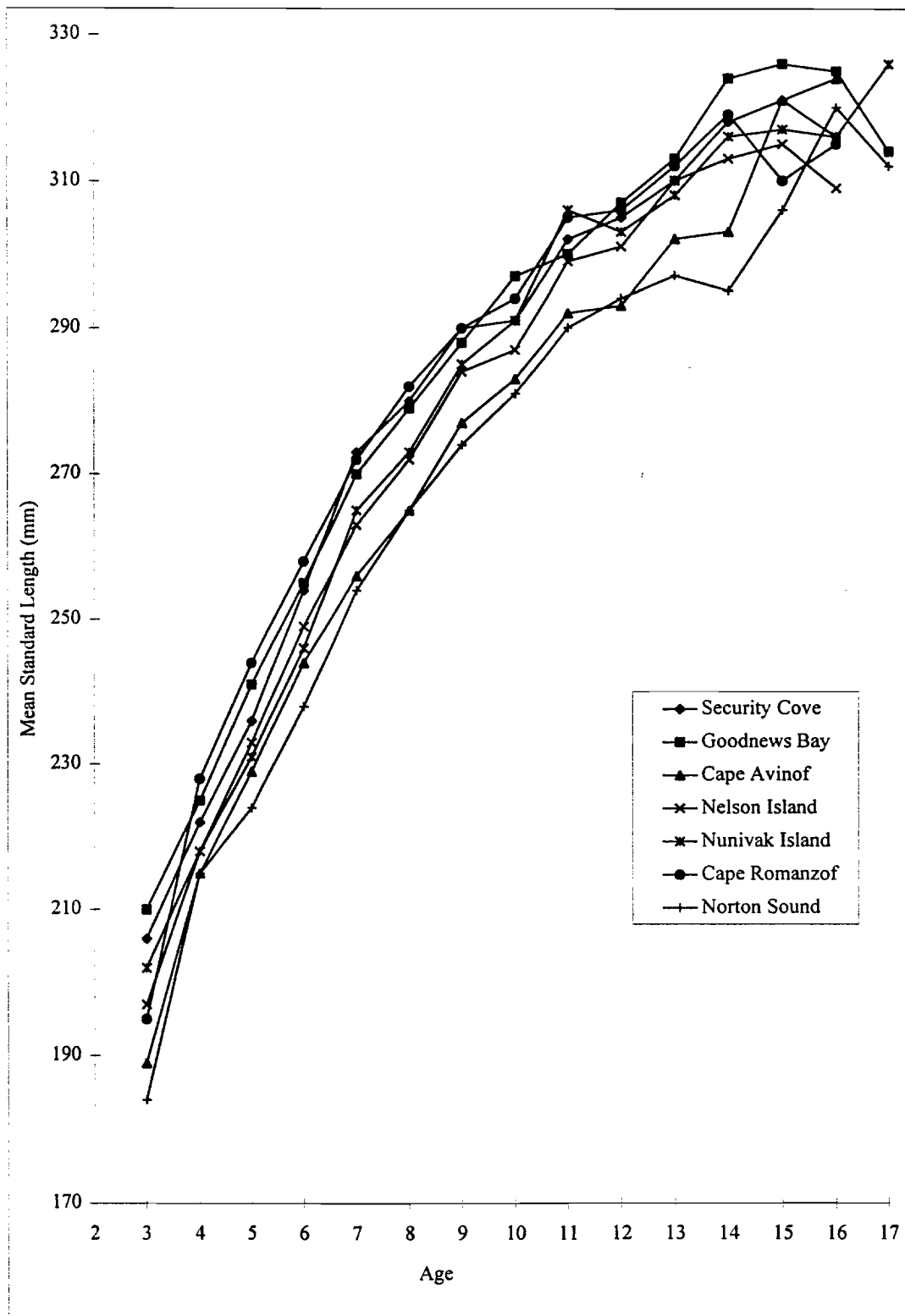


Figure 12. Mean standard length of Pacific herring by age class and commercial fishing district, Arctic-Yukon-Kuskokwim Region, Alaska, 1996.

Appendix A.1. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Security Cove District, 11 - 12 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
11 May	2											
	3											
	4											
	5											
	6	0	1	0	1	0.6	222		1	281		1
	7	6	6	0	12	7.0	200	41.1	12	279	10.7	12
	8	20	35	0	55	32.0	221	41.2	55	286	8.7	55
	9	24	34	0	58	33.7	246	44.8	58	293	10.1	58
	10	6	4	0	10	5.8	255	27.0	10	300	11.2	10
	11	8	2	0	10	5.8	252	46.5	10	310	8.6	10
	12	9	8	0	17	9.9	290	41.8	17	310	8.6	17
	13	4	1	0	5	2.9	304	19.5	5	316	9.7	5
	14	0	1	0	1	0.6	332		1	341		1
	15	0	2	0	2	1.2	260	8.5	2	321	0.0	2
	16											
	17	0	1	0	1	0.6	316		1	341		1
Sample Total		77	95	0	172	100.0	243	48.4	172	295	14.5	172
12 May	2											
	3											
	4											
	5											
	6	2	1	0	3	1.7	187	44.3	3	266	10.5	3
	7	6	5	0	11	6.4	177	21.9	11	274	5.1	11
	8	30	41	0	71	41.0	219	43.9	71	283	10.0	71
	9	23	28	0	51	29.5	235	40.7	51	288	8.9	51
	10	4	4	0	8	4.6	228	39.7	8	296	7.3	8
	11	5	5	0	10	5.8	235	49.8	10	305	14.3	10
	12	5	3	0	8	4.6	250	71.3	8	304	10.9	8
	13	3	1	0	4	2.3	302	73.8	4	321	6.6	4
	14											
	15	2	2	0	4	2.3	327	60.8	4	323	9.1	4
	16	2	0	0	2	1.2	346	0.0	2	327	6.4	2
	17	1	0	0	1	0.6	396		1	331		1
Sample Total		83	90	0	173	100.0	230	53.1	173	289	15.1	173
11-12 May	2											
	3											
	4											
	5											
	6	2	2	0	4	1.2	196	40.2	4	270	11.4	4
	7	12	11	0	23	6.7	189	34.6	23	277	8.7	23
	8	50	76	0	126	36.5	220	42.6	126	284	9.6	126
	9	47	62	0	109	31.6	241	43.1	109	291	9.9	109
	10	10	8	0	18	5.2	243	35.0	18	298	9.5	18
	11	13	7	0	20	5.8	243	47.7	20	307	11.9	20
	12	14	11	0	25	7.2	277	54.8	25	308	9.7	25
	13	7	2	0	9	2.6	303	47.2	9	318	8.3	9
	14	0	1	0	1	0.3	332		1	341		1
	15	2	4	0	6	1.7	304	58.4	6	322	7.1	6
	16	2	0	0	2	0.6	346	0.0	2	327	6.4	2
	17	1	1	0	2	0.6	356	56.6	2	336	7.1	2
All Samples Combined Sex Composition		160 46.4	185 53.6	0	345	100.0	236	51.1	345	292	15.1	345
Unaged Sex Composition		41 54.7	34 45.3	0	75	21.7	232	58.6	75	290	13.7	75

Appendix A.2. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Goodnews Bay District, 16 - 25 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
16 May	2											
	3											
	4											
	5	1	0	0	1	3.1	248		1	268		1
	6	0	1	0	1	3.1	240		1	256		1
	7	2	2	0	4	12.5	327	35.3	4	283	7.1	4
	8	4	9	0	13	40.6	319	37.0	13	283	11.1	13
	9	2	3	0	5	15.6	356	16.1	5	290	6.0	5
	10	1	2	0	3	9.4	448	80.1	3	317	4.0	3
	11	1	0	0	1	3.1	334		1	285		1
	12	1	2	0	3	9.4	457	60.1	3	318	3.5	3
	13											
	14	1	0	0	1	3.1	372		1	315		1
	15											
	16											
	17											
Sample Total		13	19	0	32	100.0	348	67.8	32	290	17.6	32
17 May	2											
	3											
	4											
	5	0	1	0	1	0.6	258		1	265		1
	6	1	6	0	7	4.0	263	25.3	7	264	10.6	7
	7	1	1	0	2	1.1	308	25.5	2	282	3.5	2
	8	25	32	0	57	32.8	330	36.7	57	286	10.0	57
	9	19	19	0	38	21.8	352	35.1	38	294	8.0	38
	10	4	9	0	13	7.5	380	43.9	13	297	6.6	13
	11	12	9	0	21	12.1	391	42.9	21	306	8.8	21
	12	8	12	0	20	11.5	421	53.4	20	310	7.5	20
	13	3	2	0	5	2.9	402	54.4	5	308	16.7	5
	14	3	2	0	5	2.9	464	34.0	5	318	9.6	5
	15	3	2	0	5	2.9	432	51.9	5	325	6.7	5
	16											
	17											
Sample Total		79	95	0	174	100.0	362	58.5	174	295	15.4	174
19 May	2											
	3											
	4											
	5	1	0	0	1	1.1	188		1	241		1
	6	0	1	0	1	1.1	254		1	256		1
	7	2	3	0	5	5.4	304	39.9	5	276	9.0	5
	8	8	23	0	31	33.3	335	43.7	31	289	10.5	31
	9	7	12	0	19	20.4	351	35.4	19	295	8.7	19
	10	2	1	0	3	3.2	401	23.9	3	289	27.4	3
	11	6	8	0	14	15.1	417	41.4	14	309	6.9	14
	12	4	3	0	7	7.5	468	53.2	7	319	10.3	7
	13	3	6	0	9	9.7	429	40.4	9	310	35.3	9
	14	1	1	0	2	2.2	521	94.8	2	332	14.1	2
	15	1	0	0	1	1.1	424		1	322		1
	16											
	17											
Sample Total		35	58	0	93	100.0	373	69.3	93	297	20.2	93

-Continued-

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
23 May	2											
	3											
	4											
	5											
	6											
	7											
	8	2	2	0	4	22.2	357	10.1	4	291	5.1	4
	9	2	2	0	4	22.2	338	18.8	4	292	2.2	4
	10											
	11	1	3	0	4	22.2	430	58.5	4	311	14.6	4
	12	3	2	0	5	27.8	466	72.9	5	316	17.1	5
	13											
	14	1	0	0	1	5.6	392		1	321		1
	15											
	16											
	17											
Sample Total		9	9	0	18	100.0	401	69.2	18	304	16.1	18
24 May	2											
	3											
	4											
	5											
	6	0	3	0	3	5.8	245	20.5	3	263	7.1	3
	7	4	3	0	7	13.5	285	25.4	7	275	5.6	7
	8	9	11	0	20	38.5	327	50.9	20	285	10.7	20
	9	2	7	0	9	17.3	356	21.1	9	296	6.8	9
	10	3	1	0	4	7.7	350	14.4	4	296	6.1	4
	11	1	1	0	2	3.8	336	45.3	2	287	12.0	2
	12	2	1	0	3	5.8	443	67.0	3	309	4.2	3
	13	2	0	0	2	3.8	389	29.7	2	309	18.4	2
	14	1	0	0	1	1.9	436		1	325		1
	15	0	1	0	1	1.9	508		1	325		1
	16											
	17											
Sample Total		24	28	0	52	100.0	338	62.3	52	289	15.6	52
25 May	2											
	3											
	4											
	5											
	6	1	5	0	6	12.0	278	30.1	6	265	6.9	6
	7	0	3	0	3	6.0	271	18.1	3	277	4.9	3
	8	5	15	0	20	40.0	317	30.5	20	280	8.2	20
	9	4	9	0	13	26.0	342	31.2	13	280	25.5	13
	10											
	11	2	1	0	3	6.0	374	67.3	3	297	8.7	3
	12	1	0	0	1	2.0	376		1	296		1
	13	1	1	0	2	4.0	425	29.7	2	314	16.3	2
	14	1	1	0	2	4.0	471	29.7	2	319	3.5	2
	15											
	16											
	17											
Sample Total		15	35	0	50	100.0	331	54.0	50	282	18.8	50

-Continued-

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
16-25 May	2											
	3											
	4											
	5	2	1	0	3	0.7	231	37.9	3	258	14.8	3
	6	2	16	0	18	4.3	263	26.7	18	263	8.2	18
	7	9	12	0	21	5.0	298	33.4	21	278	6.7	21
	8	53	92	0	145	34.6	328	39.6	145	285	10.2	145
	9	36	52	0	88	21.0	350	31.7	88	292	12.9	88
	10	10	13	0	23	5.5	386	50.3	23	298	12.7	23
	11	23	22	0	45	10.7	398	48.6	45	306	10.4	45
	12	19	20	0	39	9.3	439	58.5	39	312	10.1	39
	13	9	9	0	18	4.3	417	42.6	18	310	26.3	18
	14	8	4	0	12	2.9	459	56.6	12	321	9.3	12
	15	4	3	0	7	1.7	442	51.6	7	324	5.6	7
	16											
	17											
All Samples Combined		175	244	0	419	100.0	358	64.0	419	293	17.9	419
Sex Composition		41.8	58.2									
Unaged		21	35	0	56	13.4	351	65.3	56	290	18.3	56
Sex Composition		37.5	62.5									

Appendix A.3. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Cape Avinof District, 22 - 26 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight		Length			
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
22 May	2											
	3											
	4											
	5	0	1	0	1	1.2	187		1	236		1
	6	1	6	0	7	8.5	249	37.3	7	258	9.1	7
	7	4	1	0	5	6.1	267	18.8	5	262	11.7	5
	8	10	16	0	26	31.7	290	34.2	26	270	10.8	26
	9	6	11	0	17	20.7	345	34.6	17	285	6.7	17
	10	1	4	0	5	6.1	331	40.8	5	286	7.5	5
	11	5	4	0	9	11.0	359	62.9	9	290	15.0	9
	12	3	7	0	10	12.2	398	57.6	10	298	10.9	10
	13	0	1	0	1	1.2	387		1	303		1
	14											
	15	0	1	0	1	1.2	558		1	333		1
	16											
	17											
Sample Total		30	52	0	82	100.0	323	66.9	82	279	17.7	82
23 May	2											
	3											
	4											
	5											
	6	0	1	0	1	1.1	242		1	259		1
	7	3	2	0	5	5.4	263	21.2	5	263	7.3	5
	8	6	9	0	15	16.3	310	30.3	15	279	9.3	15
	9	10	15	0	25	27.2	329	41.9	25	284	8.5	25
	10	1	1	0	2	2.2	304	5.7	2	281	13.4	2
	11	5	9	0	14	15.2	399	48.4	14	300	12.8	14
	12	9	14	0	23	25.0	392	52.7	23	302	12.0	23
	13	0	6	0	6	6.5	449	31.0	6	305	12.5	6
	14	1	0	0	1	1.1	329		1	303		1
	15											
	16											
	17											
Sample Total		35	57	0	92	100.0	355	64.0	92	290	15.9	92
25 May	2											
	3											
	4											
	5											
	6	1	1	0	2	1.4	309	58.0	2	264	2.1	2
	7	3	1	0	4	2.8	326	26.1	4	278	4.6	4
	8	10	23	0	33	22.8	315	28.2	33	278	7.7	33
	9	13	26	0	39	26.9	347	31.6	39	287	7.0	39
	10	8	3	0	11	7.6	361	31.7	11	297	9.6	11
	11	9	17	0	26	17.9	383	40.7	26	298	8.5	26
	12	9	9	0	18	12.4	406	53.9	18	300	12.0	18
	13	1	4	0	5	3.4	482	18.1	5	316	5.5	5
	14	1	4	0	5	3.4	518	87.4	5	320	13.3	5
	15	0	2	0	2	1.4	481	47.4	2	316	3.5	2
	16											
	17											
Sample Total		55	90	0	145	100.0	366	62.6	145	291	14.4	145

-Continued-

Appendix A.3. (p. 2 of 2)

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
26 May	2											
	3											
	4											
	5											
	6											
	7											
	8	2	2	0	4	19.0	331	25.7	4	277	6.7	4
	9	2	5	0	7	33.3	329	31.2	7	278	8.6	7
	10	1	2	0	3	14.3	368	9.1	3	291	3.5	3
	11	3	0	0	3	14.3	392	10.1	3	297	1.5	3
	12	1	2	0	3	14.3	403	28.0	3	296	0.6	3
	13	1	0	0	1	4.8	440		1	324		1
	14											
	15											
	16											
	17											
Sample Total		10	11	0	21	100.0	360	42.0	21	287	13.3	21
22-26 May	2											
	3											
	4											
	5	0	1	0	1	0.3	187		1	236		1
	6	2	8	0	10	2.9	260	44.3	10	259	7.8	10
	7	10	4	0	14	4.1	282	34.9	14	267	10.6	14
	8	28	50	0	78	22.9	306	32.5	78	275	9.7	78
	9	31	57	0	88	25.9	340	35.8	88	285	7.8	88
	10	11	10	0	21	6.2	349	35.6	21	292	10.1	21
	11	22	30	0	52	15.3	384	47.0	52	297	11.2	52
	12	22	32	0	54	15.9	399	52.1	54	300	11.4	54
	13	2	11	0	13	3.8	456	35.0	13	310	11.1	13
	14	2	4	0	6	1.8	487	109.9	6	317	13.8	6
	15	0	3	0	3	0.9	506	55.9	3	321	10.4	3
	16											
	17											
All Samples Combined Sex Composition		130 38.2	210 61.8	0	340	100.0	352	65.1	340	288	16.4	340
Unaged Sex Composition		37 45.7	44 54.3	0	81	23.8	354	65.8	81	289	15.7	81

pendix A.4. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Southeastern Section, Cape Avinof District, (NW=Kipnuk, SE=Kwigillingok), 19 - 21 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
19 May	2											
	3											
	4											
	5	0	1	0	1	0.6	214		1	240		1
	6	2	6	0	8	4.6	256	15.4	8	259	4.1	8
	7	2	8	0	10	5.8	280	34.6	10	270	11.9	10
	8	23	39	0	62	35.8	308	26.6	62	275	7.6	62
	9	9	26	0	35	20.2	332	37.1	35	281	10.7	35
	10	4	4	0	8	4.6	319	51.4	8	280	11.7	8
	11	11	11	0	22	12.7	350	39.3	22	290	10.0	22
	12	6	12	0	18	10.4	391	42.9	18	295	9.8	18
	13	1	2	0	3	1.7	413	52.4	3	304	8.7	3
	14	2	1	0	3	1.7	430	99.6	3	304	24.6	3
	15	2	1	0	3	1.7	475	75.4	3	316	9.1	3
	16											
	17											
Sample Total		62	111	0	173	100.0	329	55.3	173	281	14.6	173
20 May	2											
	3											
	4											
	5											
	6	1	6	0	7	7.4	267	26.2	7	263	6.4	7
	7	1	2	0	3	3.2	274	16.6	3	268	4.7	3
	8	9	26	0	35	37.2	315	30.8	35	275	8.9	35
	9	7	16	0	23	24.5	351	38.0	23	285	10.2	23
	10	3	4	0	7	7.4	343	19.9	7	286	8.2	7
	11	4	5	0	9	9.6	382	50.7	9	293	12.7	9
	12	2	3	0	5	5.3	386	31.4	5	299	7.2	5
	13	1	2	0	3	3.2	450	71.3	3	298	6.8	3
	14	2	0	0	2	2.1	460	77.1	2	317	7.1	2
	15											
	16											
	17											
Sample Total		30	64	0	94	100.0	339	54.6	94	282	13.9	94
21 May	2											
	3											
	4											
	5	1	0	0	1	0.7	177		1	235		1
	6	6	6	0	12	9.0	273	59.9	12	263	15.8	12
	7	3	4	0	7	5.2	283	43.3	7	268	13.4	7
	8	13	27	0	40	29.9	302	42.4	40	275	11.2	40
	9	14	14	0	28	20.9	336	46.2	28	283	10.2	28
	10	2	10	0	12	9.0	350	31.8	12	288	7.1	12
	11	6	7	0	13	9.7	338	48.6	13	287	11.6	13
	12	11	4	0	15	11.2	358	46.4	15	294	11.9	15
	13	3	1	0	4	3.0	361	42.2	4	297	16.1	4
	14	0	1	0	1	0.7	497		1	336		1
	15											
	16											
	17	1	0	0	1	0.7	279		1	277		1
Sample Total		60	74	0	134	100.0	322	55.2	134	281	15.7	134

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Appendix A.4. (p. 2 of 2)

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
19-21 May	2											
	3											
	4											
	5	1	1	0	2	0.5	196	26.2	2	238	3.5	2
	6	9	18	0	27	6.7	267	42.4	27	262	11.2	27
	7	6	14	0	20	5.0	280	34.6	20	269	11.3	20
	8	45	92	0	137	34.2	308	33.1	137	275	9.0	137
	9	30	56	0	86	21.4	338	40.8	86	283	10.4	86
	10	9	18	0	27	6.7	339	37.6	27	285	9.4	27
	11	21	23	0	44	11.0	353	46.2	44	290	10.9	44
	12	19	19	0	38	9.5	377	45.1	38	295	10.3	38
	13	5	5	0	10	2.5	404	62.4	10	299	11.2	10
	14	4	2	0	6	1.5	451	76.7	6	314	20.2	6
	15	2	1	0	3	0.7	475	75.4	3	316	9.1	3
	16											
	17	1	0	0	1	0.2	279		1	277		1
All Samples Combined		152	249	0	401	100.0	329	55.4	401	281	14.8	401
Sex Composition		37.9	62.1									
Unaged		22	27	0	49	12.2	325	67.9	49	282	18.2	49
Sex Composition		44.9	55.1									

Appendix A.5. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Nunivak Island District, 14 - 30 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
14 May	2											
	3											
	4											
	5											
	6	1	0	0	1	0.8	274		1	265		1
	7	1	1	0	2	1.5	298	8.5	2	279	2.8	2
	8	12	13	0	25	18.9	323	37.0	25	281	15.0	25
	9	5	8	0	13	9.8	356	34.9	13	294	9.5	13
	10	3	2	0	5	3.8	384	31.9	5	299	7.4	5
	11	5	5	0	10	7.6	407	60.2	10	306	10.7	10
	12	6	8	0	14	10.6	406	58.3	13	303	11.9	14
	13	9	11	0	20	15.2	431	60.8	20	314	12.5	20
	14	8	19	0	27	20.5	441	55.2	27	318	10.3	27
	15	6	7	0	13	9.8	442	51.7	13	319	8.4	13
	16	1	1	0	2	1.5	461	9.9	2	321	8.5	2
	17											
Sample Total		57	75	0	132	100.0	397	68.6	131	304	18.6	132
16 May	2											
	3											
	4											
	5											
	6											
	7	2	0	0	2	2.3	286	45.3	2	280	9.9	2
	8	1	9	0	10	11.4	333	47.3	10	284	12.5	10
	9	3	6	0	9	10.2	372	63.9	9	296	12.1	9
	10	2	1	0	3	3.4	348	26.9	3	293	2.0	3
	11	3	2	1	6	6.8	397	26.7	6	306	8.9	6
	12	17	7	0	24	27.3	409	46.3	24	312	9.9	24
	13	14	7	0	21	23.9	410	42.4	21	313	10.7	21
	14	2	3	1	6	6.8	442	72.3	6	319	9.0	6
	15	0	4	0	4	4.5	473	85.3	4	329	10.3	4
	16	2	1	0	3	3.4	435	9.0	3	320	4.7	3
	17											
Sample Total		46	40	2	88	100.0	397	60.5	88	307	15.8	88
24 May	2											
	3											
	4											
	5	1	0	0	1	1.0	218		1	247		1
	6	1	0	0	1	1.0	212		1	261		1
	7	1	1	0	2	2.0	187	24.0	2	252	14.1	2
	8	5	20	0	25	25.3	322	42.8	25	283	12.8	25
	9	4	9	0	13	13.1	345	26.6	13	287	8.5	13
	10	0	3	0	3	3.0	317	45.4	3	278	4.7	3
	11	4	4	0	8	8.1	361	34.2	8	301	6.9	8
	12	8	9	0	17	17.2	379	40.5	17	297	26.2	17
	13	5	8	0	13	13.1	399	37.7	13	313	9.5	13
	14	5	4	0	9	9.1	408	64.5	9	316	8.5	9
	15	2	5	0	7	7.1	414	57.0	7	318	4.3	7
	16											
	17											
Sample Total		36	63	0	99	100.0	357	61.8	99	295	21.0	99

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Appendix A.5. (p. 2 of 2)

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
30 May	2											
	3											
	4											
	5											
	6	6	11	0	17	10.1	234	43.7	17	253	13.3	17
	7	2	8	0	10	5.9	276	52.0	10	271	17.2	10
	8	14	41	0	55	32.5	306	37.1	55	279	9.0	55
	9	3	24	0	27	16.0	330	43.9	27	288	12.3	27
	10	1	4	0	5	3.0	345	38.8	5	294	12.0	5
	11	3	11	0	14	8.3	383	48.0	14	302	9.1	14
	12	3	10	0	13	7.7	392	47.8	13	304	9.7	13
	13	2	4	0	6	3.6	394	65.5	6	311	10.5	6
	14	2	7	0	9	5.3	379	76.4	9	306	22.3	9
	15	6	2	0	8	4.7	399	70.6	8	314	7.1	8
	16	1	4	0	5	3.0	419	31.8	5	316	5.7	5
	17											
Sample Total		43	126	0	169	100.0	330	68.2	169	287	20.6	169
14-30 May	2											
	3											
	4											
	5	1	0	0	1	0.2	218		1	247		1
	6	8	11	0	19	3.9	235	42.6	19	254	13.0	19
	7	6	10	0	16	3.3	269	53.7	16	271	16.3	16
	8	32	83	0	115	23.6	316	40.0	115	281	11.7	115
	9	15	47	0	62	12.7	344	44.3	62	290	11.3	62
	10	6	10	0	16	3.3	353	40.7	16	292	10.8	16
	11	15	22	1	38	7.8	387	47.9	38	303	9.1	38
	12	34	34	0	68	13.9	397	48.3	67	305	16.6	68
	13	30	30	0	60	12.3	413	51.4	60	313	10.9	60
	14	17	33	1	51	10.5	424	65.7	51	316	13.3	51
	15	14	18	0	32	6.6	429	64.1	32	319	8.5	32
	16	4	6	0	10	2.0	432	27.7	10	318	5.9	10
	17											
All Samples Combined Sex Composition		182 37.4	304 62.6	2	488	100.0	366	72.1	487	297	21.0	488
Unaged Sex Composition		89 52.0	82 48.0	4	175	35.9	376	68.4	175	303	19.0	175

Appendix A.6. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Nelson Island District, 16 - 18 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight		Length			
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
16 May	2											
	3											
	4											
	5											
	6	0	1	0	1	1.1	284		1	275		1
	7	1	1	0	2	2.2	304	8.5	2	269	9.9	2
	8	7	11	0	18	19.8	335	33.8	18	281	11.0	18
	9	11	11	0	22	24.2	353	34.6	22	285	7.6	22
	10	5	2	0	7	7.7	367	41.2	7	292	7.1	7
	11	4	4	0	8	8.8	420	43.3	8	305	7.2	8
	12	7	8	0	15	16.5	444	35.9	15	306	8.6	15
	13	5	5	0	10	11.0	432	48.5	10	305	11.7	10
	14	2	1	0	3	3.3	456	24.6	3	314	4.6	3
	15	0	3	0	3	3.3	480	37.4	3	328	10.4	3
	16	0	2	0	2	2.2	506	25.5	2	325	0.7	2
	17											
Sample Total		42	49	0	91	100.0	389	63.1	91	295	16.3	91
17 May	2											
	3											
	4											
	5											
	6	0	1	0	1	0.9	270		1	259		1
	7											
	8	10	8	0	18	15.4	330	52.1	18	282	11.3	18
	9	12	13	0	25	21.4	365	45.4	25	287	9.1	25
	10	4	5	0	9	7.7	369	19.9	9	289	4.6	9
	11	3	10	0	13	11.1	419	44.4	13	302	9.9	13
	12	8	15	0	23	19.7	432	45.3	23	305	11.3	23
	13	9	9	0	18	15.4	442	59.0	18	308	13.4	18
	14	0	3	0	3	2.6	497	43.0	3	315	10.2	3
	15	1	2	0	3	2.6	461	108.7	3	313	25.0	3
	16	0	2	0	2	1.7	489	21.2	2	275	56.6	2
	17	0	2	0	2	1.7	496	5.7	2	319	4.9	2
Sample Total		47	70	0	117	100.0	400	67.7	117	296	16.6	117
18 May	2											
	3											
	4											
	5											
	6	1	4	0	5	2.6	300	59.7	5	266	11.1	5
	7	3	2	0	5	2.6	317	22.9	5	282	7.8	5
	8	20	27	0	47	24.2	334	35.1	47	282	9.0	47
	9	28	22	0	50	25.8	352	33.3	50	288	7.2	50
	10	6	14	0	20	10.3	376	41.2	20	292	10.7	20
	11	12	16	0	28	14.4	392	47.3	28	302	9.9	28
	12	15	6	0	21	10.8	404	48.0	21	302	8.7	21
	13	7	2	0	9	4.6	460	52.2	9	316	16.8	9
	14	6	0	0	6	3.1	423	31.5	6	313	8.3	6
	15	0	2	0	2	1.0	511	41.0	2	331	13.4	2
	16											
	17	0	1	0	1	0.5	580		1	342		1
Sample Total		98	96	0	194	100.0	369	56.9	194	292	15.1	194

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Appendix A.6. (p. 2 of 2)

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
16-18 May	2											
	3											
	4											
	5											
	6	1	6	0	7	1.7	293	50.1	7	266	10.2	7
	7	4	3	0	7	1.7	313	20.0	7	278	9.8	7
	8	37	46	0	83	20.6	333	38.7	83	282	9.8	83
	9	51	46	0	97	24.1	356	37.1	97	287	7.8	97
	10	15	21	0	36	9.0	373	36.4	36	291	8.7	36
	11	19	30	0	49	12.2	404	47.0	49	303	9.4	49
	12	30	29	0	59	14.7	425	46.5	59	304	9.8	59
	13	21	16	0	37	9.2	444	54.3	37	309	14.1	37
	14	8	4	0	12	3.0	450	43.8	12	313	7.4	12
	15	1	7	0	8	2.0	481	66.7	8	323	17.6	8
	16	0	4	0	4	1.0	498	21.5	4	300	43.4	4
	17	0	3	0	3	0.7	524	48.7	3	326	14.0	3
All Samples Combined		187	215	0	402	100.0	383	62.9	402	294	15.8	402
Sex Composition		46.5	53.5									
Unaged		9	13	0	22	5.5	419	54.0	22	302	15.0	22
Sex Composition		40.9	59.1									

Appendix A.7. Age, sex, and size composition of herring sampled from the subsistence harvest, Nelson Island District, 28 - 31 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
28 May	2											
	3											
	4	1	0	0	1	1.2	172		1	237		1
	5	4	1	0	5	6.0	179	25.4	5	240	13.3	5
	6	17	11	0	28	33.3	211	29.2	28	253	10.1	28
	7	4	2	0	6	7.1	231	54.2	6	264	17.1	6
	8	14	11	0	25	29.8	278	34.0	25	277	6.8	25
	9	4	7	0	11	13.1	317	23.5	11	280	4.8	11
	10	1	2	0	3	3.6	325	51.8	3	291	9.0	3
	11	1	0	0	1	1.2	368		1	300		1
	12											
	13	2	0	0	2	2.4	349	106.1	2	308	17.7	2
	14											
	15	1	1	0	2	2.4	410	62.2	2	304	9.2	2
	16											
	17											
Sample Total		49	35	0	84	100.0	258	63.6	84	268	18.8	84
31 May	2											
	3	1	0	0	1	0.3	134		1	211		1
	4	2	6	0	8	2.6	145	23.0	8	228	10.6	8
	5	41	39	0	80	25.6	166	25.9	80	235	8.3	80
	6	71	51	0	122	39.0	201	34.9	122	248	12.8	122
	7	15	3	0	18	5.8	232	35.1	18	263	9.5	18
	8	38	20	0	58	18.5	255	43.9	58	267	13.3	58
	9	12	6	0	18	5.8	280	40.4	18	275	8.7	18
	10	1	1	0	2	0.6	291	60.8	2	277	26.9	2
	11	1	1	0	2	0.6	299	1.4	2	286	2.8	2
	12	2	1	0	3	1.0	341	68.0	3	286	11.7	3
	13											
	14											
	15	1	0	0	1	0.3	360		1	311		1
	16											
	17											
Sample Total		185	128	0	313	100.0	210	53.7	313	251	18.5	313
28-31 May	2											
	3	1	0	0	1	0.3	134		1	211		1
	4	3	6	0	9	2.3	148	23.3	9	229	10.4	9
	5	45	40	0	85	21.4	167	25.8	85	235	8.6	85
	6	88	62	0	150	37.8	202	34.1	150	249	12.5	150
	7	19	5	0	24	6.0	232	39.3	24	263	11.4	24
	8	52	31	0	83	20.9	262	42.3	83	270	12.5	83
	9	16	13	0	29	7.3	294	38.8	29	277	7.8	29
	10	2	3	0	5	1.3	312	51.2	5	285	16.6	5
	11	2	1	0	3	0.8	322	39.8	3	291	8.3	3
	12	2	1	0	3	0.8	341	68.0	3	286	11.7	3
	13	2	0	0	2	0.5	349	106.1	2	308	17.7	2
	14											
	15	2	1	0	3	0.8	393	52.6	3	306	7.8	3
	16											
	17											
All Samples Combined		234	163	0	397	100.0	220	59.2	397	255	19.8	397
Sex Composition		58.9	41.1									
Unaged		14	9	0	23	5.8	212	66.2	23	253	23.5	23
Sex Composition		60.9	39.1									

Appendix A.8. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Cape Romanzof District, 18 - 25 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
18 May	2											
	3											
	4											
	5											
	6	2	2	0	4	4.4	257	11.9	4	276	4.5	4
	7	1	2	0	3	3.3	289	23.8	3	282	6.9	3
	8	19	15	0	34	37.8	324	29.4	34	290	9.6	34
	9	11	12	0	23	25.6	338	45.2	23	298	10.8	23
	10	2	2	0	4	4.4	357	24.6	4	300	14.2	4
	11	3	2	0	5	5.6	399	38.8	5	316	15.0	5
	12	5	3	0	8	8.9	402	25.4	8	313	6.3	8
	13	3	2	0	5	5.6	450	63.7	5	325	9.1	5
	14	1	1	0	2	2.2	374	44.5	2	305	15.6	2
	15											
	16	1	1	0	2	2.2	459	75.7	2	331	24.0	2
	17											
Sample Total		48	42	0	90	100.0	347	57.2	90	298	16.1	90
19 May	2											
	3											
	4											
	5											
	6	0	4	0	4	2.9	251	23.1	4	261	2.1	4
	7											
	8	16	21	0	37	26.6	315	40.7	37	284	13.2	37
	9	13	17	0	30	21.6	339	53.8	30	293	12.0	30
	10	5	5	0	10	7.2	344	44.1	10	297	8.0	10
	11	9	7	0	16	11.5	407	33.3	16	307	10.1	16
	12	10	14	0	24	17.3	402	40.8	24	307	7.5	24
	13	2	8	0	10	7.2	423	45.8	10	309	12.1	10
	14	1	4	0	5	3.6	438	88.0	5	313	13.9	5
	15	1	1	0	2	1.4	452	9.9	2	328	8.5	2
	16	0	1	0	1	0.7	455		1	338		1
	17											
Sample Total		57	82	0	139	100.0	361	64.8	139	297	16.7	139
21 May	2											
	3											
	4											
	5											
	6	1	4	0	5	4.4	222	26.4	5	256	9.1	5
	7	0	2	0	2	1.8	290	36.8	2	282	2.8	2
	8	18	18	0	36	31.9	295	34.5	36	281	9.6	36
	9	9	13	0	22	19.5	340	44.4	22	287	12.2	22
	10	3	8	0	11	9.7	365	59.8	11	302	11.6	11
	11	2	4	1	7	6.2	317	125.4	7	301	6.1	7
	12	7	7	0	14	12.4	404	70.9	14	306	13.7	14
	13	2	9	1	12	10.6	411	62.9	12	307	16.2	12
	14	1	1	0	2	1.8	407	106.8	2	320	12.7	2
	15	0	2	0	2	1.8	511	67.2	2	332	23.3	2
	16											
	17											
Sample Total		43	68	2	113	100.0	340	78.2	113	292	18.4	113

-Continued-

Appendix A.8. (p. 2 of 2)

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
22 May	2											
	3											
	4											
	5											
	6	0	2	0	2	1.2	282	2.8	2	279	4.2	2
	7											
	8	11	25	0	36	21.2	340	41.1	36	292	9.8	36
	9	12	23	0	35	20.6	349	33.2	35	297	10.1	35
	10	10	7	0	17	10.0	375	33.6	17	303	8.4	17
	11	8	5	0	13	7.6	400	59.4	13	306	11.4	13
	12	10	19	0	29	17.1	404	51.6	28	311	11.8	29
	13	6	11	0	17	10.0	426	33.8	17	316	10.4	17
	14	5	10	0	15	8.8	446	52.3	15	324	14.3	15
	15	3	2	0	5	2.9	450	50.5	5	319	12.7	5
	16	0	1	0	1	0.6	432		1	336		1
	17											
Sample Total		65	105	0	170	100.0	382	57.4	169	304	15.2	170
25 May	2											
	3											
	4											
	5											
	6	0	2	0	2	2.6	240	16.3	2	262	3.5	2
	7	1	0	0	1	1.3	244		1	264		1
	8	8	10	0	18	23.7	309	38.7	18	286	10.6	18
	9	7	4	0	11	14.5	331	34.7	11	289	12.5	11
	10	4	3	0	7	9.2	353	62.0	7	296	16.6	7
	11	3	5	0	8	10.5	379	48.7	8	304	11.9	8
	12	9	8	0	17	22.4	385	47.7	17	302	12.7	17
	13	1	4	0	5	6.6	365	28.7	5	303	9.3	5
	14	2	1	0	3	3.9	414	58.9	3	310	5.5	3
	15	0	2	0	2	2.6	418	72.1	2	326	0.7	2
	16	1	0	0	1	1.3	398		1	306		1
	17	1	0	0	1	1.3	349		1	316		1
Sample Total		37	39	0	76	100.0	350	57.9	76	296	15.9	76
18-25 May	2											
	3											
	4											
	5											
	6	3	14	0	17	2.9	246	26.5	17	265	10.8	17
	7	2	4	0	6	1.0	282	29.0	6	279	8.6	6
	8	72	89	0	161	27.4	317	39.9	161	286	11.4	161
	9	52	69	0	121	20.6	341	43.2	121	293	11.8	121
	10	24	25	0	49	8.3	362	46.3	49	300	10.9	49
	11	25	23	1	49	8.3	387	67.7	49	306	11.2	49
	12	41	51	0	92	15.6	400	49.6	91	308	11.3	92
	13	14	34	1	49	8.3	418	50.2	49	312	13.3	49
	14	10	17	0	27	4.6	432	62.5	27	319	14.2	27
	15	4	7	0	11	1.9	455	53.9	11	324	12.5	11
	16	2	3	0	5	0.9	440	46.0	5	328	17.6	5
	17	1	0	0	1	0.2	349		1	316		1
All Samples Combined Sex Composition		250 42.7	336 57.3	2	588	100.0	360	65.4	587	298	17.0	588
Unaged Sex Composition		27 45.0	33 55.0	2	62	10.5	373	71.0	62	301	16.7	62

Appendix A.9. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, St Michael Subdistrict, Norton Sound District, 24 - 25 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
24 May	2											
	3											
	4											
	5	1	0	0	1	0.4	146		1	239		1
	6	3	0	0	3	1.2	263	21.4	3	278	13.7	3
	7	8	2	0	10	3.9	296	47.3	10	282	12.2	10
	8	48	64	0	112	44.1	311	31.4	111	284	9.7	112
	9	27	23	0	50	19.7	333	28.3	49	292	7.8	49
	10	18	11	0	29	11.4	362	37.8	29	299	10.6	29
	11	14	7	0	21	8.3	361	29.5	21	300	8.4	21
	12	9	7	0	16	6.3	389	27.4	16	308	7.0	16
	13	3	4	0	7	2.8	411	26.8	7	310	9.8	7
	14	1	1	0	2	0.8	439	21.2	2	312	2.1	2
	15	1	1	0	2	0.8	423	105.4	2	310	16.3	2
	16	1	0	0	1	0.4	401		1	298		1
	17											
Sample Total		134	120	0	254	100.0	333	46.7	252	291	12.9	253
25 May	2											
	3											
	4											
	5											
	6											
	7	1	6	0	7	5.0	295	28.3	7	276	8.1	7
	8	33	40	0	73	51.8	302	32.5	73	275	11.9	73
	9	11	8	0	19	13.5	305	20.8	19	278	9.8	19
	10	11	7	1	19	13.5	331	26.1	17	284	13.3	19
	11	8	5	0	13	9.2	349	50.5	13	292	15.3	13
	12	2	4	0	6	4.3	359	29.0	6	295	8.8	6
	13	3	0	0	3	2.1	291	29.7	3	284	19.0	3
	14											
	15	0	1	0	1	0.7	403		1	308		1
	16											
	17											
Sample Total		69	71	1	141	100.0	313	37.5	139	279	13.6	141
24-25 May	2											
	3											
	4											
	5	1	0	0	1	0.3	146		1	239		1
	6	3	0	0	3	0.8	263	21.4	3	278	13.7	3
	7	9	8	0	17	4.3	295	39.5	17	279	10.8	17
	8	81	104	0	185	46.8	307	32.0	184	281	11.6	185
	9	38	31	0	69	17.5	325	29.0	68	288	10.4	68
	10	29	18	1	48	12.2	350	36.9	46	293	13.8	48
	11	22	12	0	34	8.6	357	38.6	34	297	11.9	34
	12	11	11	0	22	5.6	381	30.3	22	304	9.4	22
	13	6	4	0	10	2.5	375	63.4	10	302	17.2	10
	14	1	1	0	2	0.5	439	21.2	2	312	2.1	2
	15	1	2	0	3	0.8	416	75.3	3	309	11.5	3
	16	1	0	0	1	0.3	401		1	298		1
	17											
All Samples Combined		203	191	1	395	100.0	326	44.7	391	287	14.3	394
Sex Composition		51.5	48.5									
Unaged		18	27	0	45	11.4	333	48.7	45	291	14.9	45
Sex Composition		40.0	60.0									

Appendix A.10. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Cape Denbigh Subdistrict, Norton Sound District, 24 - 25 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
24 May	2											
	3											
	4											
	5											
	6	1	0	0	1	0.4	417		1	305		1
	7	6	5	0	11	4.4	291	31.9	11	273	8.3	11
	8	33	64	0	97	39.0	316	30.4	97	282	11.6	97
	9	15	20	0	35	14.1	336	38.8	35	291	10.0	35
	10	15	14	0	29	11.6	343	27.7	29	293	9.5	29
	11	20	20	0	40	16.1	368	43.9	40	299	13.3	40
	12	10	12	0	22	8.8	401	42.1	22	309	16.1	22
	13	1	4	0	5	2.0	393	25.1	5	304	15.7	5
	14	2	5	0	7	2.8	412	41.2	7	314	11.7	7
	15	0	2	0	2	0.8	498	11.3	2	319	14.1	2
	16											
	17											
Sample Total		103	146	0	249	100.0	343	49.2	249	291	15.6	249
25 May	2											
	3											
	4											
	5	0	1	0	1	0.8	222		1	254		1
	6	1	1	0	2	1.6	240	42.4	2	256	15.6	2
	7	8	4	0	12	9.4	280	35.4	12	272	11.0	12
	8	26	33	1	60	46.9	306	33.0	60	277	7.8	60
	9	9	6	0	15	11.7	329	27.1	15	283	8.3	15
	10	5	9	0	14	10.9	346	34.9	14	287	10.0	14
	11	8	2	0	10	7.8	378	28.1	10	302	8.2	10
	12	7	4	0	11	8.6	405	38.4	11	302	8.7	11
	13	1	1	0	2	1.6	386	52.3	2	304	2.1	2
	14	1	0	0	1	0.8	367		1	302		1
	15											
	16											
	17											
Sample Total		66	61	1	128	100.0	325	49.8	128	282	13.7	128
24-25 May	2											
	3											
	4											
	5	0	1	0	1	0.3	222		1	254		1
	6	2	1	0	3	0.8	299	106.5	3	272	30.4	3
	7	14	9	0	23	6.1	285	33.4	23	273	9.6	23
	8	59	97	1	157	41.6	312	31.7	157	280	10.7	157
	9	24	26	0	50	13.3	334	35.6	50	289	10.1	50
	10	20	23	0	43	11.4	344	29.9	43	291	9.8	43
	11	28	22	0	50	13.3	370	41.1	50	299	12.5	50
	12	17	16	0	33	8.8	403	40.3	33	306	14.3	33
	13	2	5	0	7	1.9	391	29.8	7	304	12.8	7
	14	3	5	0	8	2.1	407	41.4	8	313	11.6	8
	15	0	2	0	2	0.5	498	11.3	2	319	14.1	2
	16											
	17											
All Samples Combined Sex Composition		169 44.9	207 55.1	1	377	100.0	337	50.1	377	288	15.5	377
Unaged Sex Composition		43 58.9	30 41.1	0	73	19.4	341	47.6	73	290	16.6	73

Appendix A.11. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Norton Sound District combined, 24 - 25 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
24-25 May	1											
	2											
	3											
	4											
	5	1	1	0	2	0.3	184	53.7	2	247	10.6	2
	6	5	1	0	6	0.8	281	71.4	6	275	21.3	6
	7	23	17	0	40	5.2	290	36.0	40	275	10.6	40
	8	140	201	1	342	44.3	309	31.9	341	280	11.2	342
	9	62	57	0	119	15.4	329	32.1	118	288	10.3	118
	10	49	41	1	91	11.8	347	33.7	89	292	12.1	91
	11	50	34	0	84	10.9	365	40.4	84	298	12.2	84
	12	28	27	0	55	7.1	394	37.9	55	305	12.5	55
	13	8	9	0	17	2.2	382	51.6	17	303	15.1	17
	14	4	6	0	10	1.3	413	39.6	10	312	10.3	10
	15	1	4	0	5	0.6	449	69.9	5	313	12.1	5
	16	1	0	0	1	0.1	401		1	298		1
	17											
Sample Total		372	398	2	772	100.0	331	47.7	768	287	14.9	771
Sex Composition		48.3	51.7									
Unaged		61	57	0	118	15.3	338	48.0	118	290	15.9	118
Sex Composition		51.7	48.3									

Appendix A.12. Age, sex, and size composition of herring sampled from the commercial beach seine harvest, Unalakleet Subdistrict, Norton Sound District, 25 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
25 May	2											
	3											
	4											
	5	18	19	0	37	9.4	182	36.7	37	245	14.3	37
	6	34	26	0	60	15.3	225	39.2	60	262	12.7	60
	7	31	26	0	57	14.5	261	37.6	57	273	11.6	57
	8	83	66	3	152	38.7	284	39.8	148	279	11.5	152
	9	18	12	0	30	7.6	311	50.8	30	287	18.4	30
	10	11	11	1	23	5.9	345	47.0	21	297	12.1	23
	11	10	9	0	19	4.8	372	40.2	19	304	9.1	19
	12	3	7	0	10	2.5	387	69.9	10	308	16.8	10
	13	3	1	0	4	1.0	384	37.0	4	309	4.7	4
	14	0	1	0	1	0.3	474		1	316		1
	15											
	16											
	17											
Sample Total		211	178	4	393	100.0	276	65.9	387	276	19.9	393
Sex Composition		54.2	45.8									
Unaged		33	23	0	56	14.2	248	57.4	56	269	17.7	56
Sex Composition		58.9	41.1									

Appendix A.13. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Security Cove District, 7 - 29 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
7-12 May	2											
	3											
	4	3	1	0	4	1.1	83	24.7	4	230	10.9	4
	5	9	6	0	15	4.2	103	50.6	15	243	12.1	15
	6	7	8	0	15	4.2	159	71.6	15	266	17.9	15
	7	18	12	0	30	8.5	250	82.0	30	283	15.3	30
	8	52	47	0	99	28.0	266	69.2	99	285	12.3	99
	9	59	52	0	111	31.4	308	54.0	111	295	10.3	111
	10	3	3	0	6	1.7	311	75.1	6	293	24.2	6
	11	9	6	0	15	4.2	328	83.0	15	302	13.3	15
	12	10	9	0	19	5.4	326	77.1	19	305	11.9	19
	13	16	4	0	20	5.7	355	65.9	20	312	13.1	20
	14	5	3	0	8	2.3	420	67.1	8	320	6.9	8
	15	4	6	0	10	2.8	427	106.0	10	324	17.5	10
	16	0	1	0	1	0.3	308		1	293		1
	17											
Sample Total		195	158	0	353	100.0	284	93.6	353	290	20.7	353
13-17 May	2											
	3	1	0	0	1	0.3	30		1	211		1
	4	8	10	0	18	5.4	60	40.6	18	224	10.3	18
	5	29	25	0	54	16.2	92	52.6	54	242	11.0	54
	6	35	13	0	48	14.4	150	69.9	48	255	9.3	48
	7	16	16	0	32	9.6	186	54.1	32	270	9.4	32
	8	48	34	0	82	24.6	215	70.0	82	280	10.0	82
	9	33	22	0	55	16.5	238	74.7	55	286	8.8	55
	10	3	3	0	6	1.8	270	64.6	6	288	16.9	6
	11	7	3	0	10	3.0	260	60.3	10	300	8.7	10
	12	4	6	0	10	3.0	315	59.8	10	304	8.4	10
	13	3	8	0	11	3.3	288	67.7	11	308	4.9	11
	14	3	1	0	4	1.2	331	72.9	4	315	15.0	4
	15	0	2	0	2	0.6	383	4.2	2	327	8.5	2
	16	0	1	0	1	0.3	478		1	323		1
	17											
Sample Total		190	144	0	334	100.0	189	95.4	334	270	24.8	334
22-26 May	2											
	3	2	2	0	4	1.0	102	14.0	4	208	4.5	4
	4	27	19	0	46	11.4	122	30.4	46	222	9.2	46
	5	54	30	0	84	20.7	138	28.3	84	234	8.7	84
	6	48	50	0	98	24.2	175	38.6	98	252	13.4	98
	7	17	17	0	34	8.4	218	45.4	34	269	10.2	34
	8	34	33	0	67	16.5	223	40.1	67	274	8.8	67
	9	20	23	0	43	10.6	263	52.1	43	282	12.6	43
	10	4	2	0	6	1.5	272	31.6	6	290	8.4	6
	11	3	2	0	5	1.2	303	42.5	5	307	5.0	5
	12	5	4	0	9	2.2	333	73.2	9	306	12.4	9
	13	2	2	0	4	1.0	303	48.8	4	301	8.4	4
	14	0	1	0	1	0.2	454		1	316		1
	15	2	1	0	3	0.7	359	48.2	3	309	12.3	3
	16	0	1	0	1	0.2	282		1	333		1
	17											
Sample Total		218	187	0	405	100.0	192	69.2	405	256	26.1	405

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Appendix A.13. (p. 2 of 2)

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
27-29 May	2											
	3	2	2	0	4	1.6	80	10.5	4	202	6.2	4
	4	20	17	0	37	15.1	82	30.5	37	221	8.2	37
	5	29	34	0	63	25.7	111	40.1	63	233	9.8	63
	6	24	23	0	47	19.2	171	46.5	47	254	10.7	47
	7	8	9	0	17	6.9	228	47.3	17	271	7.7	17
	8	19	18	0	37	15.1	250	49.0	37	282	8.5	37
	9	11	14	0	25	10.2	295	64.5	25	289	11.1	25
	10	1	1	0	2	0.8	343	75.0	2	297	12.7	2
	11	1	1	0	2	0.8	374	28.3	2	310	0.7	2
	12	4	2	0	6	2.4	321	68.6	6	303	13.9	6
	13	1	0	0	1	0.4	336		1	316		1
	14	0	1	0	1	0.4	376		1	319		1
	15	2	1	0	3	1.2	345	80.1	3	321	7.8	3
	16											
	17											
Sample Total		122	123	0	245	100.0	180	93.6	245	255	29.3	245
7-29 May	2											
	3	5	4	0	9	0.7	84	25.5	9	206	5.9	9
	4	58	47	0	105	7.9	96	40.2	105	222	9.2	105
	5	121	95	0	216	16.2	116	44.3	216	236	10.6	216
	6	114	94	0	208	15.6	167	52.3	208	254	12.9	208
	7	59	54	0	113	8.5	219	63.8	113	273	12.6	113
	8	153	132	0	285	21.3	239	64.9	285	280	11.2	285
	9	123	111	0	234	17.5	282	66.8	234	290	11.6	234
	10	11	9	0	20	1.5	290	61.6	20	291	16.3	20
	11	20	12	0	32	2.4	306	75.1	32	302	10.6	32
	12	23	21	0	44	3.3	324	69.4	44	305	11.2	44
	13	22	14	0	36	2.7	328	69.8	36	310	10.9	36
	14	8	6	0	14	1.0	394	74.9	14	318	9.1	14
	15	8	10	0	18	1.3	397	90.9	18	321	15.0	18
	16	0	3	0	3	0.2	356	106.5	3	316	20.8	3
	17											
All Samples Combined		725	612	0	1337	100.0	213	97.2	1337	268	28.8	1337
Sex Composition		54.2	45.8									
Unaged		121	98	0	219	16.4	210	98.5	219	267	30.5	219
Sex Composition		55.3	44.7									

Appendix A.14. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Goodnews Bay District, 6 - 29 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
6-12 May	2											
	3											
	4	2	6	0	8	2.0	230	96.2	8	240	30.4	8
	5	20	11	0	31	7.8	204	38.7	31	242	12.6	31
	6	16	11	0	27	6.8	238	37.4	27	253	12.5	27
	7	16	11	0	27	6.8	278	49.2	27	268	13.0	27
	8	87	45	0	132	33.1	324	49.1	132	278	11.1	132
	9	58	32	0	90	22.6	364	56.2	90	289	10.0	90
	10	7	7	0	14	3.5	399	54.9	14	296	10.8	14
	11	18	13	1	32	8.0	417	44.2	32	301	10.1	32
	12	7	7	0	14	3.5	448	61.0	14	306	8.4	14
	13	11	7	0	18	4.5	473	56.6	18	310	9.5	18
	14	1	3	0	4	1.0	579	66.6	4	328	4.3	4
	15	1	0	0	1	0.3	534		1	320		1
	16	0	1	0	1	0.3	488		1	324		1
	17											
Sample Total		244	154	1	399	100.0	338	89.1	399	280	22.2	399
14-19 May	2											
	3	1	1	0	2	0.5	107	4.2	2	210	6.4	2
	4	11	10	0	21	5.5	154	20.6	21	230	6.8	21
	5	47	56	0	103	27.0	201	35.7	103	244	12.1	103
	6	25	36	0	61	16.0	231	28.1	61	259	11.1	61
	7	10	12	0	22	5.8	278	47.8	22	275	12.9	22
	8	33	37	0	70	18.3	316	48.1	70	280	13.8	70
	9	26	31	0	57	14.9	333	47.3	57	288	12.0	57
	10	5	6	0	11	2.9	387	35.5	11	296	8.4	11
	11	10	4	0	14	3.7	389	44.2	14	298	10.0	14
	12	2	9	0	11	2.9	437	63.6	11	308	11.2	11
	13	2	2	0	4	1.0	465	36.1	4	317	11.0	4
	14	2	2	0	4	1.0	485	52.7	4	325	8.1	4
	15	0	2	0	2	0.5	474	11.3	2	332	7.1	2
	16											
	17											
Sample Total		174	208	0	382	100.0	274	88.3	382	268	26.0	382
22-26 May	2											
	3											
	4	27	8	0	35	9.4	142	15.6	35	221	7.3	35
	5	73	49	0	122	32.9	179	27.9	122	238	9.6	122
	6	29	25	0	54	14.6	217	30.5	54	252	10.0	54
	7	20	11	0	31	8.4	266	38.0	31	270	8.4	31
	8	27	26	0	53	14.3	308	43.4	53	278	10.3	53
	9	12	19	0	31	8.4	347	50.7	31	288	8.1	31
	10	6	4	0	10	2.7	357	60.8	10	296	12.9	10
	11	10	8	0	18	4.9	380	56.0	18	300	11.7	18
	12	3	2	0	5	1.3	412	32.6	5	305	9.0	5
	13	0	2	0	2	0.5	414	19.8	2	312	19.8	2
	14	2	3	0	5	1.3	426	116.1	5	321	7.2	5
	15	1	2	0	3	0.8	475	58.0	3	322	2.6	3
	16	0	1	0	1	0.3	634		1	326		1
	17	0	1	0	1	0.3	396		1	314		1
Sample Total		210	161	0	371	100.0	247	92.3	371	259	27.9	371

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Appendix A.14. (p. 2 of 2)

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
27-29 May	2											
	3											
	4	7	7	0	14	10.8	140	18.8	14	221	6.1	14
	5	18	11	0	29	22.3	175	23.3	29	240	8.8	29
	6	8	6	0	14	10.8	222	31.9	14	256	6.0	14
	7	3	5	0	8	6.2	260	41.4	8	267	11.5	8
	8	10	14	0	24	18.5	323	50.9	24	283	8.8	24
	9	9	10	0	19	14.6	344	52.4	19	289	11.3	19
	10	3	2	0	5	3.8	387	49.3	5	301	4.7	5
	11	3	1	0	4	3.1	380	15.6	4	297	10.8	4
	12	2	1	0	3	2.3	407	36.3	3	305	2.0	3
	13	4	2	0	6	4.6	434	39.1	6	318	10.3	6
	14	0	2	0	2	1.5	525	46.7	2	323	17.7	2
	15	0	2	0	2	1.5	548	65.1	2	329	1.4	2
	16											
	17											
Sample Total		67	63	0	130	100.0	276	107.7	130	268	30.6	130
6-29 May	2											
	3	1	1	0	2	0.2	107	4.2	2	210	6.4	2
	4	47	31	0	78	6.1	154	42.5	78	225	12.8	78
	5	158	127	0	285	22.2	189	33.7	285	241	11.2	285
	6	78	78	0	156	12.2	227	31.8	156	255	11.1	156
	7	49	39	0	88	6.9	272	44.3	88	270	11.6	88
	8	157	122	0	279	21.8	319	48.1	279	279	11.6	279
	9	105	92	0	197	15.4	350	53.8	197	288	10.4	197
	10	21	19	0	40	3.1	383	51.9	40	297	10.1	40
	11	41	26	1	68	5.3	399	48.7	68	300	10.4	68
	12	14	19	0	33	2.6	435	56.8	33	307	8.9	33
	13	17	13	0	30	2.3	460	51.8	30	313	10.5	30
	14	5	10	0	15	1.2	496	96.8	15	324	7.9	15
	15	2	6	0	8	0.6	501	53.5	8	326	5.9	8
	16	0	2	0	2	0.2	561	103.2	2	325	1.4	2
	17	0	1	0	1	0.1	396		1	314		1
All Samples Combined		695	586	1	1282	100.0	286	98.7	1282	269	27.3	1282
Sex Composition		54.3	45.7									
Unaged		78	79	0	157	12.2	271	93.3	157	267	27.9	157
Sex Composition		49.7	50.3									

Appendix A.15. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Cape Avinof District, 18 May - 5 June, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
18-19 May	2											
	3											
	4	3	1	0	4	4.7	146	13.1	4	214	6.6	4
	5	8	6	0	14	16.5	173	22.1	14	227	8.4	14
	6	9	13	0	22	25.9	211	31.7	22	238	14.5	22
	7	5	1	0	6	7.1	234	51.0	6	252	12.9	6
	8	10	9	0	19	22.4	292	30.0	19	265	8.4	19
	9	3	4	0	7	8.2	332	47.4	7	272	7.6	7
	10	2	2	0	4	4.7	373	24.0	4	282	9.7	4
	11	1	2	0	3	3.5	378	28.6	3	286	1.7	3
	12	1	3	0	4	4.7	374	42.7	4	284	6.3	4
	13	2	0	0	2	2.4	399	72.1	2	294	6.4	2
	14											
	15											
	16											
	17											
Sample Total		44	41	0	85	100.0	257	80.0	85	252	23.8	85
20-24 May	2											
	3	1	0	0	1	0.3	63		1	172		1
	4	9	7	0	16	4.6	145	22.9	16	217	9.8	16
	5	47	42	0	89	25.4	170	27.4	89	227	7.8	89
	6	39	46	0	85	24.3	216	29.9	85	245	9.6	85
	7	23	12	0	35	10.0	249	36.2	35	258	9.2	35
	8	42	40	0	82	23.4	277	40.9	82	265	11.2	82
	9	8	13	0	21	6.0	312	40.7	21	275	8.5	21
	10	1	6	0	7	2.0	324	38.9	7	274	10.8	7
	11	4	2	0	6	1.7	372	56.3	6	294	10.2	6
	12	2	2	0	4	1.1	391	26.4	4	293	9.2	4
	13	1	0	0	1	0.3	399		1	301		1
	14	0	2	0	2	0.6	425	102.5	2	298	30.4	2
	15	0	1	0	1	0.3	325		1	311		1
	16											
	17											
Sample Total		177	173	0	350	100.0	233	67.9	350	249	22.0	350
27 May- 2 June	2											
	3	1	9	0	10	2.5	90	12.3	10	189	11.2	10
	4	13	14	1	28	7.1	128	14.0	28	216	8.0	28
	5	40	39	0	79	20.0	166	24.6	79	229	14.4	79
	6	36	43	0	79	20.0	209	34.6	79	245	13.0	79
	7	10	15	0	25	6.3	241	37.8	25	255	10.6	25
	8	35	44	0	79	20.0	287	41.4	79	266	11.6	79
	9	18	25	0	43	10.9	336	41.2	43	279	10.3	43
	10	3	10	0	13	3.3	360	45.6	13	285	14.8	13
	11	5	7	0	12	3.0	390	59.1	12	290	13.0	12
	12	5	9	0	14	3.5	420	52.1	14	296	16.3	14
	13	1	5	0	6	1.5	435	107.1	6	306	11.5	6
	14	1	3	0	4	1.0	408	48.5	4	305	6.9	4
	15	0	1	0	1	0.3	498		1	322		1
	16	0	2	0	2	0.5	549	5.7	2	324	14.8	2
	17											
Sample Total		168	226	1	395	100.0	249	96.6	395	254	28.8	395

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Appendix A.15. (p. 2 of 2)

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
3- 5 June	2											
	3	2	3	3	8	4.3	91	33.8	8	193	11.3	8
	4	4	10	0	14	7.4	128	18.4	14	214	13.0	14
	5	16	15	0	31	16.5	161	28.9	31	231	13.0	31
	6	14	29	1	44	23.4	206	34.8	44	245	12.9	44
	7	5	5	0	10	5.3	236	24.3	10	257	10.8	10
	8	14	20	0	34	18.1	272	45.6	34	268	13.0	34
	9	7	9	0	16	8.5	321	50.2	16	279	11.4	16
	10	4	5	0	9	4.8	335	68.3	9	288	15.4	9
	11	5	9	0	14	7.4	380	56.5	14	293	14.3	14
	12	2	3	0	5	2.7	359	68.6	5	292	10.8	5
	13	0	2	0	2	1.1	436	96.9	2	298	17.7	2
	14											
	15	0	1	0	1	0.5	556		1	331		1
	16											
	17											
Sample Total		73	111	4	188	100.0	239	94.0	188	254	30.0	188
18 May- 5 June	2											
	3	4	12	3	19	1.9	89	23.7	19	189	11.6	19
	4	29	32	1	62	6.1	134	19.0	62	215	9.6	62
	5	111	102	0	213	20.9	168	26.4	213	229	11.5	213
	6	98	131	1	230	22.6	211	32.7	230	244	12.1	230
	7	43	33	0	76	7.5	244	36.4	76	256	10.1	76
	8	101	113	0	214	21.0	281	41.3	214	265	11.4	214
	9	36	51	0	87	8.5	327	43.8	87	277	10.0	87
	10	10	23	0	33	3.2	347	50.9	33	283	14.1	33
	11	15	20	0	35	3.4	382	53.9	35	292	12.5	35
	12	10	17	0	27	2.7	397	54.9	27	293	13.5	27
	13	4	7	0	11	1.1	425	86.5	11	302	11.5	11
	14	1	5	0	6	0.6	414	59.8	6	303	15.1	6
	15	0	3	0	3	0.3	460	120.2	3	321	10.0	3
	16	0	2	0	2	0.2	549	5.7	2	324	14.8	2
	17											
All Samples Combined		462	551	5	1018	100.0	242	86.1	1018	252	26.5	1018
Sex Composition		45.6	54.4									
Unaged		109	117	1	227	22.3	254	92.1	227	256	28.6	227
Sex Composition		48.2	51.8									

Appendix A.16. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Nelson Island District, 19 May -13 June, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight		Number Weighed	Length		Number Measured
		Male	Female	Unknown	Total		Mean (g)	SD		Mean (mm)	SD	
19 May	2											
	3											
	4	2	2	0	4	6.1	156	32.4	4	220	10.7	4
	5	12	3	0	15	22.7	176	24.8	15	231	9.5	15
	6	4	4	0	8	12.1	227	30.8	8	247	12.8	8
	7	6	0	0	6	9.1	207	47.1	6	252	8.1	6
	8	6	3	0	9	13.6	298	60.3	9	272	14.4	9
	9	7	4	0	11	16.7	345	39.0	11	282	7.6	11
	10	1	0	0	1	1.5	400		1	291		1
	11	1	2	0	3	4.5	432	28.2	3	298	6.5	3
	12	2	4	0	6	9.1	399	44.6	6	299	7.0	6
	13	1	2	0	3	4.5	415	64.3	3	305	3.6	3
	14											
	15											
	16											
	17											
Sample Total		42	24	0	66	100.0	275	99.5	66	262	28.6	66
20-26 May	2											
	3	1	0	0	1	0.2	108		1	204		1
	4	8	9	0	17	3.5	140	18.4	17	221	8.0	17
	5	37	34	0	71	14.6	184	31.6	71	237	8.4	71
	6	52	49	0	101	20.8	217	41.7	101	251	12.1	101
	7	13	8	0	21	4.3	256	36.7	21	265	11.1	21
	8	64	53	0	117	24.1	286	45.2	117	273	11.3	117
	9	31	36	0	67	13.8	330	44.5	67	285	10.8	67
	10	3	3	0	6	1.2	360	32.6	6	299	10.6	6
	11	15	16	0	31	6.4	379	42.8	31	301	9.6	31
	12	13	10	0	23	4.7	402	58.3	23	300	12.5	23
	13	6	9	0	15	3.1	455	75.1	15	314	9.7	15
	14	2	5	0	7	1.4	426	65.2	7	314	13.1	7
	15	3	5	0	8	1.6	448	55.3	8	316	11.5	8
	16											
	17											
Sample Total		248	237	0	485	100.0	278	91.2	485	269	26.8	485
27 May- 2 June	2											
	3	4	2	0	6	1.3	129	51.9	6	214	27.6	6
	4	8	7	0	15	3.4	131	15.7	15	217	6.0	15
	5	60	46	0	106	23.8	159	27.5	106	231	9.6	106
	6	40	73	1	114	25.6	206	33.5	114	249	11.1	114
	7	11	11	0	22	4.9	246	38.4	22	263	10.3	22
	8	38	44	0	82	18.4	274	36.5	82	270	9.7	82
	9	22	28	0	50	11.2	318	48.1	50	283	10.3	50
	10	3	4	0	7	1.6	333	32.2	7	289	9.4	7
	11	4	4	0	8	1.8	378	63.8	8	299	8.2	8
	12	7	8	0	15	3.4	407	40.9	15	306	6.2	15
	13	2	8	0	10	2.2	445	45.5	10	310	10.4	10
	14	2	1	0	3	0.7	381	28.6	3	305	8.2	3
	15	2	4	0	6	1.3	437	67.0	6	316	9.6	6
	16	1	0	0	1	0.2	410		1	309		1
	17											
Sample Total		204	240	1	445	100.0	240	87.8	445	258	27.1	445

-Continued-

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
3- 9 June	2											
	3	8	7	0	15	3.1	86	19.1	15	191	11.5	15
	4	16	13	0	29	6.1	133	20.0	29	217	10.5	29
	5	48	42	0	90	18.8	170	36.5	90	232	11.9	90
	6	58	61	0	119	24.9	205	41.4	119	248	11.0	119
	7	4	4	0	8	1.7	241	43.5	8	263	8.7	8
	8	50	56	0	106	22.2	278	42.1	106	274	10.4	106
	9	18	21	0	39	8.2	302	48.7	39	284	12.0	39
	10	6	12	0	18	3.8	333	46.1	18	286	8.9	18
	11	3	11	0	14	2.9	368	42.3	14	297	9.7	14
	12	7	14	1	22	4.6	395	48.4	22	302	8.5	22
	13	5	7	0	12	2.5	421	76.9	12	307	12.6	12
	14	1	2	0	3	0.6	483	93.5	3	314	19.0	3
	15	2	1	0	3	0.6	440	48.5	3	314	7.6	3
	16											
	17											
Sample Total		226	251	1	478	100.0	242	91.8	478	258	29.7	478
10-13 June	2											
	3	12	6	0	18	5.2	94	23.0	18	196	13.1	18
	4	13	5	0	18	5.2	131	16.4	18	218	10.8	18
	5	41	31	0	72	20.8	158	25.3	72	232	9.7	72
	6	32	32	0	64	18.5	203	32.5	64	247	11.1	64
	7	3	7	0	10	2.9	249	49.2	10	266	13.4	10
	8	33	39	0	72	20.8	265	44.5	72	271	10.1	72
	9	9	23	0	32	9.2	304	50.5	32	282	10.7	32
	10	7	7	0	14	4.0	318	62.3	14	283	10.7	14
	11	4	6	0	10	2.9	370	62.6	10	297	9.6	10
	12	3	9	0	12	3.5	384	57.0	12	295	11.2	12
	13	9	10	0	19	5.5	415	52.4	19	308	9.3	19
	14	1	3	0	4	1.2	509	90.1	4	318	8.9	4
	15	0	1	0	1	0.3	526		1	310		1
	16											
	17											
Sample Total		167	179	0	346	100.0	240	98.6	346	257	30.8	346
19 May-13 June	2											
	3	25	15	0	40	2.2	96	30.4	40	197	16.7	40
	4	47	36	0	83	4.6	135	19.3	83	218	9.3	83
	5	198	156	0	354	19.5	167	31.8	354	233	10.2	354
	6	186	219	1	406	22.3	208	38.1	406	249	11.4	406
	7	37	30	0	67	3.7	245	41.8	67	263	11.1	67
	8	191	195	0	386	21.2	278	43.4	386	272	10.7	386
	9	87	112	0	199	10.9	318	48.4	199	284	10.7	199
	10	20	26	0	46	2.5	334	49.5	46	287	10.5	46
	11	27	39	0	66	3.6	378	48.7	66	299	9.3	66
	12	32	45	1	78	4.3	398	50.6	78	301	10.3	78
	13	23	36	0	59	3.2	431	64.0	59	310	10.2	59
	14	6	11	0	17	0.9	448	80.7	17	313	12.3	17
	15	7	11	0	18	1.0	447	57.2	18	315	9.6	18
	16	1	0	0	1	0.1	410		1	309		1
	17											
All Samples Combined		887	931	2	1820	100.0	252	93.8	1820	261	28.9	1820
Sex Composition		48.8	51.2									
Unaged		37	42	0	79	4.3	237	94.3	79	256	28.1	79
Sex Composition		46.8	53.2									

Appendix A.17. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Nunivak Island District, 12 May - 4 June, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
12 May	2											
	3											
	4											
	5											
	6											
	7											
	8											
	9	1	0	0	1	50.0	412		1	302		1
	10											
	11											
13-15 May	12	1	0	0	1	50.0	386		1	305		1
	13											
	14											
	15											
	16											
	17											
	Sample Total	2	0	0	2	100.0	399	18.4	2	304	2.1	2
21-26 May	2											
	3											
	4											
	5											
	6	2	1	0	3	2.8	239	14.5	3	253	7.5	3
	7	5	0	0	5	4.6	295	38.7	5	276	7.1	5
	8	17	14	0	31	28.7	289	39.6	31	275	7.8	31
	9	6	5	1	12	11.1	319	48.2	12	287	11.6	12
	10	4	4	0	8	7.4	369	39.9	8	295	10.5	8
	11	6	2	0	8	7.4	390	49.7	8	307	7.3	8
	12	10	1	0	11	10.2	386	49.5	11	307	11.2	11
	13	6	2	0	8	7.4	438	56.8	8	309	8.2	8
	14	8	5	0	13	12.0	435	38.9	13	317	12.6	13
	15	4	2	0	6	5.6	442	96.5	6	319	13.9	6
	16	2	0	0	2	1.9	434	8.5	2	316	6.4	2
	17	0	1	0	1	0.9	502		1	326		1
	Sample Total	70	37	1	108	100.0	356	78.9	108	294	20.4	108
21-26 May	2											
	3											
	4	2	1	0	3	1.0	142	7.2	3	222	2.6	3
	5	45	16	0	61	19.9	164	25.0	61	232	9.6	61
	6	57	40	0	97	31.6	203	28.8	97	246	9.2	97
	7	11	8	1	20	6.5	266	35.3	20	266	10.9	20
	8	30	38	0	68	22.1	290	43.7	68	276	11.5	68
	9	13	11	0	24	7.8	312	41.3	24	284	7.6	24
	10	1	3	0	4	1.3	354	53.4	4	289	19.3	4
	11	5	2	0	7	2.3	391	58.1	7	307	10.6	7
	12	6	4	0	10	3.3	413	42.0	10	300	5.1	10
	13	3	3	0	6	2.0	415	50.7	6	312	10.2	6
	14	3	1	0	4	1.3	431	43.0	4	315	7.6	4
	15	1	1	0	2	0.7	477	49.5	2	313	12.0	2
	16	1	0	0	1	0.3	432		1	319		1
	17											
	Sample Total	178	128	1	307	100.0	250	84.0	307	261	25.7	307

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Appendix A.17. (p. 2 of 2)

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
27 May- 2 June	2											
	3	1	2	0	3	0.7	117	17.9	3	204	8.2	3
	4	14	10	0	24	5.9	136	26.1	24	217	11.1	24
	5	54	61	0	115	28.3	163	25.6	114	230	9.9	115
	6	61	66	0	127	31.2	206	31.3	127	246	10.1	127
	7	16	9	0	25	6.1	243	29.2	25	262	9.7	25
	8	21	49	0	70	17.2	280	42.8	70	270	11.7	70
	9	10	12	0	22	5.4	334	36.0	22	283	9.7	22
	10	3	2	0	5	1.2	302	37.6	5	285	6.9	5
	11	3	2	0	5	1.2	386	33.7	5	302	1.9	5
	12	2	2	0	4	1.0	364	41.0	4	299	6.2	4
	13	0	3	0	3	0.7	401	47.4	3	298	15.1	3
	14	1	0	0	1	0.2	418		1	319		1
	15	0	2	0	2	0.5	485	1.4	2	314	2.1	2
	16	0	1	0	1	0.2	456		1	314		1
	17											
Sample Total		186	221	0	407	100.0	220	72.6	406	249	23.7	407
3- 4 June	2											
	3	1	0	0	1	11.1	94		1	194		1
	4	3	0	0	3	33.3	136	12.0	3	220	2.6	3
	5	1	0	0	1	11.1	142		1	225		1
	6	1	1	1	3	33.3	202	33.9	2	247	11.5	3
	7											
	8	1	0	0	1	11.1	246		1	263		1
	9											
	10											
	11											
	12											
	13											
	14											
	15											
	16											
	17											
Sample Total		7	1	1	9	100.0	162	51.7	8	232	22.0	9
12 May- 4 June	2											
	3	2	2	0	4	0.5	112	18.7	4	202	8.3	4
	4	19	11	0	30	3.6	137	23.6	30	218	10.1	30
	5	100	77	0	177	21.2	163	25.3	176	231	9.8	177
	6	121	108	1	230	27.6	205	30.2	229	246	9.7	230
	7	32	17	1	50	6.0	257	36.1	50	265	10.7	50
	8	69	101	0	170	20.4	286	42.6	170	273	11.3	170
	9	30	28	1	59	7.1	324	42.7	59	285	9.5	59
	10	8	9	0	17	2.0	346	49.5	17	291	12.3	17
	11	14	6	0	20	2.4	389	47.1	20	306	7.8	20
	12	19	7	0	26	3.1	393	46.2	26	303	8.8	26
	13	9	8	0	17	2.0	423	52.2	17	308	10.7	17
	14	12	6	0	18	2.2	433	37.6	18	316	11.1	18
	15	5	5	0	10	1.2	457	76.6	10	317	11.5	10
	16	3	1	0	4	0.5	439	12.4	4	316	4.2	4
	17	0	1	0	1	0.1	502		1	326		1
All Samples Combined Sex Composition		443 53.4	387 46.6	3	833	100.0	249	89.6	831	259	28.2	833
Unaged Sex Composition		110 50.5	108 49.5	3	221	26.5	271	101.9	220	266	29.8	221

Appendix A.18. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Cape Romanzof District, 14 May - 6 June, 1996.

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
13 - 19 May	2											
	3											
	4	1	2	0	3	0.7	160	6.6	3	233	7.9	3
	5	29	15	0	44	10.9	184	44.7	44	246	18.3	44
	6	29	27	0	56	13.9	229	42.5	56	260	12.5	56
	7	3	6	0	9	2.2	242	45.4	9	268	14.4	9
	8	59	64	0	123	30.5	304	53.6	123	286	12.9	123
	9	44	27	0	71	17.6	325	47.5	71	294	10.8	71
	10	17	10	0	27	6.7	325	56.7	27	295	18.1	27
	11	12	6	0	18	4.5	366	53.6	18	305	12.2	18
	12	13	17	0	30	7.4	392	57.6	30	309	15.6	30
	13	1	6	0	7	1.7	415	55.8	7	313	11.5	7
	14	4	5	0	9	2.2	437	67.2	9	319	12.2	9
	15	2	1	0	3	0.7	418	78.8	3	318	15.0	3
	16	2	1	0	3	0.7	427	113.7	3	315	10.1	3
	17											
Sample Total		216	187	0	403	100.0	299	82.6	403	284	24.3	403
20 - 26 May	2											
	3											
	4	3	1	0	4	1.0	136	23.0	4	224	3.7	4
	5	18	16	0	34	8.6	187	42.1	34	246	14.0	34
	6	34	37	0	71	18.0	226	38.4	71	259	13.4	71
	7	9	7	0	16	4.1	275	41.9	16	277	9.6	16
	8	60	70	0	130	32.9	286	44.1	130	280	12.6	130
	9	37	23	1	61	15.4	312	50.5	61	288	9.5	61
	10	7	4	0	11	2.8	315	21.5	11	294	6.1	11
	11	8	6	0	14	3.5	352	52.4	14	299	10.6	14
	12	20	22	0	42	10.6	384	58.4	42	306	14.7	42
	13	2	2	0	4	1.0	400	103.6	4	306	20.4	4
	14	4	2	0	6	1.5	440	68.4	6	319	10.3	6
	15	1	1	0	2	0.5	360	157.0	2	291	32.5	2
	16											
	17											
Sample Total		203	191	1	395	100.0	286	75.6	395	278	22.1	395
27 May- 2 June	2											
	3											
	4	3	5	0	8	5.0	154	23.2	8	234	10.3	8
	5	10	4	0	14	8.7	169	24.3	14	242	11.8	14
	6	10	13	0	23	14.3	209	37.6	23	254	13.8	23
	7	2	6	0	8	5.0	255	54.2	7	277	22.1	8
	8	32	20	0	52	32.3	267	48.5	52	278	16.5	52
	9	13	6	0	19	11.8	298	46.0	19	287	16.5	19
	10	8	6	0	14	8.7	341	60.9	14	297	16.6	14
	11	4	5	0	9	5.6	384	52.5	9	312	17.5	9
	12	6	6	0	12	7.5	361	66.1	12	304	15.6	12
	13	2	0	0	2	1.2	362	12.0	2	312	11.3	2
	14											
	15											
	16											
	17											
Sample Total		90	71	0	161	100.0	269	79.1	160	276	26.4	161

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Appendix A.18. (p. 2 of 2)

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
5- 6 June	2											
	3	9	3	0	12	9.7	84	9.7	12	195	8.6	12
	4	2	0	0	2	1.6	106	43.8	2	207	26.9	2
	5	18	16	0	34	27.4	160	25.4	34	241	11.9	34
	6	6	5	0	11	8.9	184	40.4	11	252	15.6	11
	7	2	3	0	5	4.0	194	48.2	5	253	17.7	5
	8	16	14	0	30	24.2	266	47.3	30	278	16.0	30
	9	9	2	0	11	8.9	288	29.9	11	288	9.6	11
	10	3	3	0	6	4.8	288	63.3	6	286	22.0	6
	11	0	2	0	2	1.6	375	5.7	2	315	4.2	2
	12	2	1	0	3	2.4	275	37.6	3	300	20.7	3
	13	1	4	0	5	4.0	404	21.1	5	315	7.1	5
	14	1	0	0	1	0.8	383		1	322		1
	15	0	2	0	2	1.6	393	10.6	2	318	2.8	2
	16											
	17											
Sample Total		69	55	0	124	100.0	220	89.7	124	260	35.0	124
All Weeks Combined 14 May- 6 June	2											
	3	9	3	0	12	1.1	84	9.7	12	195	8.6	12
	4	9	8	0	17	1.6	145	27.4	17	228	13.5	17
	5	75	51	0	126	11.6	177	38.9	126	244	15.0	126
	6	79	82	0	161	14.9	222	41.4	161	258	13.4	161
	7	16	22	0	38	3.5	252	51.6	37	272	16.6	38
	8	167	168	0	335	30.9	288	50.7	335	282	14.1	335
	9	103	58	1	162	15.0	314	48.5	162	290	11.4	162
	10	35	23	0	58	5.4	323	54.5	58	294	16.4	58
	11	24	19	0	43	4.0	366	51.8	43	305	13.5	43
	12	41	46	0	87	8.0	380	61.9	87	306	15.2	87
	13	6	12	0	18	1.7	403	58.1	18	312	12.3	18
	14	9	7	0	16	1.5	435	64.5	16	319	10.7	16
	15	3	4	0	7	0.6	394	82.8	7	310	20.7	7
	16	2	1	0	3	0.3	427	113.7	3	315	10.1	3
	17											
All Samples Combined		578	504	1	1083	100.0	281	83.9	1082	278	26.2	1083
Sex Composition		53.4	46.6									
Not Aged		58	53	0	111	10.2	294	96.4	108	283	30.9	111
Sex Composition		52.3	47.7									

Appendix A.19. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, St Michael Subdistrict, Norton Sound District, 23 May - 6 June, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
23-26 May	2											
	3											
	4	0	1	0	1	0.4	166		1	218		1
	5	15	5	0	20	8.8	167	25.0	20	230	10.5	20
	6	9	6	0	15	6.6	205	47.9	15	243	15.3	15
	7	9	5	0	14	6.2	253	40.0	14	259	11.2	14
	8	55	31	0	86	37.9	285	31.8	86	267	9.0	86
	9	17	14	0	31	13.7	318	41.6	31	278	10.3	31
	10	11	12	0	23	10.1	330	26.9	23	280	7.2	23
	11	10	3	0	13	5.7	370	24.3	13	290	7.6	13
	12	8	5	0	13	5.7	389	43.3	13	298	10.8	13
	13	4	5	0	9	4.0	377	55.6	9	296	13.4	9
	14	0	1	0	1	0.4	410		1	300		1
	15	0	1	0	1	0.4	454		1	320		1
	16											
	17											
Sample Total		138	89	0	227	100.0	291	69.8	227	269	21.0	227
27 May- 1 June	2											
	3	2	0	0	2	0.6	71	4.2	2	183	7.8	2
	4	0	1	0	1	0.3	131		1	212		1
	5	62	46	0	108	30.9	150	22.0	108	223	8.8	108
	6	43	15	0	58	16.6	189	37.3	58	238	11.6	58
	7	30	6	0	36	10.3	218	41.6	36	249	13.1	36
	8	59	38	0	97	27.7	270	39.7	97	263	10.3	97
	9	8	6	0	14	4.0	292	26.3	14	273	6.5	14
	10	11	8	0	19	5.4	304	37.7	19	275	9.6	19
	11	1	1	0	2	0.6	339	22.6	2	290	0.7	2
	12	7	1	0	8	2.3	358	40.2	8	294	8.4	8
	13	3	1	0	4	1.1	402	18.4	4	296	4.8	4
	14	1	0	0	1	0.3	349		1	297		1
	15											
	16											
	17											
Sample Total		227	123	0	350	100.0	220	71.9	350	247	23.5	350
3- 6 June	2											
	3	1	3	0	4	1.4	81	7.9	4	185	3.7	4
	4	3	5	0	8	2.8	129	20.4	8	218	9.4	8
	5	52	68	0	120	41.7	148	18.8	120	226	12.3	120
	6	19	29	0	48	16.7	171	23.6	48	236	10.3	48
	7	20	11	0	31	10.8	208	41.0	31	249	13.0	31
	8	18	34	0	52	18.1	257	36.9	52	266	8.3	52
	9	2	8	0	10	3.5	284	60.5	10	273	11.5	10
	10	1	7	0	8	2.8	318	49.2	8	280	12.1	8
	11	0	1	0	1	0.3	369		1	302		1
	12	3	0	0	3	1.0	325	57.8	3	292	18.5	3
	13	0	3	0	3	1.0	368	72.3	3	292	12.1	3
	14											
	15											
	16											
	17											
Sample Total		119	169	0	288	100.0	191	64.8	288	241	23.3	288

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Appendix A.19. (p. 2 of 2)

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
23 May- 6 June	2											
	3	3	3	0	6	0.7	77	8.0	6	184	4.7	6
	4	3	7	0	10	1.2	133	21.4	10	218	8.6	10
	5	129	119	0	248	28.7	151	21.2	248	225	10.9	248
	6	71	50	0	121	14.0	184	35.8	121	238	11.8	121
	7	59	22	0	81	9.4	220	43.5	81	251	13.2	81
	8	132	103	0	235	27.2	273	37.6	235	265	9.5	235
	9	27	28	0	55	6.4	305	44.2	55	276	9.8	55
	10	23	27	0	50	5.8	318	36.6	50	278	9.1	50
	11	11	5	0	16	1.8	366	24.9	16	290	7.5	16
	12	18	6	0	24	2.8	371	47.6	24	296	10.9	24
	13	7	9	0	16	1.8	382	50.7	16	295	11.1	16
	14	1	1	0	2	0.2	380	43.1	2	299	2.1	2
	15	0	1	0	1	0.1	454		1	320		1
	16											
	17											
All Samples Combined		484	381	0	865	100.0	229	79.4	865	251	25.3	865
Sex Composition		56.0	44.0									
Unaged		22	18	0	40	4.6	217	72.5	40	248	21.4	40
Sex Composition		55.0	45.0									

Appendix A.20. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Unalakleet Subdistrict, Norton Sound District, 22 - 28 May, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
22-26 May	2											
	3	1	0	0	1	0.4	57		1	146		1
	4											
	5	8	9	0	17	7.3	183	15.9	17	236	8.9	17
	6	15	10	0	25	10.7	206	31.9	25	243	14.0	25
	7	10	6	0	16	6.8	260	42.8	16	265	16.5	16
	8	44	39	0	83	35.5	285	40.0	83	268	13.8	83
	9	13	11	0	24	10.3	317	34.4	24	276	9.9	24
	10	13	15	0	28	12.0	357	36.2	28	287	12.2	28
	11	12	4	0	16	6.8	357	29.5	16	292	9.8	16
	12	7	7	0	14	6.0	387	38.3	14	301	10.5	14
	13	6	2	0	8	3.4	385	38.6	8	303	15.1	8
	14	1	1	0	2	0.9	381	0.0	2	310	17.7	2
	15											
	16											
	17											
Sample Total		130	104	0	234	100.0	294	70.7	234	271	23.8	234
27-28 May	2											
	3											
	4											
	5	10	10	0	20	11.6	173	16.8	9	229	10.8	20
	6	13	12	0	25	14.5	173	29.6	7	242	16.7	25
	7	4	5	0	9	5.2	264	21.8	5	260	7.8	9
	8	41	29	0	70	40.7	271	42.4	25	264	11.5	70
	9	6	6	0	12	7.0	320	34.9	4	277	17.2	12
	10	5	8	0	13	7.6	279	31.8	2	285	10.5	13
	11	3	2	0	5	2.9	0		0	290	23.8	5
	12	2	5	0	7	4.1	395	33.9	2	298	7.8	7
	13	3	1	0	4	2.3	408		1	297	6.1	4
	14	3	3	0	6	3.5	0		0	286	20.4	6
	15											
	16	1	0	0	1	0.6	0		0	320		1
	17											
Sample Total		91	81	0	172	100.0	253	68.5	55	263	23.4	172
22-28 May	2											
	3	1	0	0	1	0.2	57		1	146		1
	4											
	5	18	19	0	37	9.1	180	16.7	26	232	10.5	37
	6	28	22	0	50	12.3	199	33.8	32	242	15.2	50
	7	14	11	0	25	6.2	261	38.3	21	263	14.0	25
	8	85	68	0	153	37.7	282	40.8	108	267	12.9	153
	9	19	17	0	36	8.9	317	33.8	28	276	12.6	36
	10	18	23	0	41	10.1	352	40.6	30	286	11.6	41
	11	15	6	0	21	5.2	357	29.5	16	291	13.7	21
	12	9	12	0	21	5.2	388	36.8	16	300	9.5	21
	13	9	3	0	12	3.0	388	36.9	9	301	12.9	12
	14	4	4	0	8	2.0	381	0.0	2	292	21.5	8
	15											
	16	1	0	0	1	0.2	0		0	320		1
	17											
All Samples Combined		221	185	0	406	100.0	286	72.0	289	267	23.9	406
Sex Composition		54.4	45.6									
Unaged		29	22	0	51	12.6	326	78.6	34	270	24.4	51
Sex Composition		56.9	43.1									

Appendix A.21. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Cape Denhigh Subdistrict, Norton Sound District, 21 May - 9 June, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
21-26 May	1											
	2											
	3											
	4											
	5	14	5	0	19	4.6	163	26.9	19	231	7.8	19
	6	19	15	0	34	8.2	208	30.7	34	246	10.2	34
	7	25	11	0	36	8.7	251	36.2	36	260	8.5	36
	8	102	72	0	174	42.1	284	40.2	174	268	9.3	174
	9	25	16	0	41	9.9	310	38.7	41	276	9.6	41
	10	18	21	0	39	9.4	332	36.6	39	281	7.4	39
	11	14	7	0	21	5.1	358	51.8	21	292	12.9	21
	12	11	17	0	28	6.8	387	47.5	28	294	9.5	28
	13	7	9	0	16	3.9	410	39.9	16	298	7.2	16
	14	0	2	0	2	0.5	421	49.5	2	305	7.1	2
	15	2	0	0	2	0.5	392	36.8	2	299	4.9	2
	16											
	17	1	0	0	1	0.2	458		1	312		1
Sample Total		238	175	0	413	100.0	293	69.2	413	270	18.2	413
27 May- 2 June	1											
	2											
	3	3	0	0	3	0.7	79	9.9	3	189	6.7	3
	4	1	2	0	3	0.7	124	19.1	3	215	8.7	3
	5	36	21	0	57	13.6	143	23.3	57	222	8.0	57
	6	35	34	0	69	16.4	175	30.7	69	237	11.1	69
	7	17	19	0	36	8.6	222	44.3	36	255	13.5	36
	8	97	63	0	160	38.1	261	38.0	160	264	10.0	160
	9	13	12	0	25	6.0	285	34.3	25	270	10.1	25
	10	19	14	0	33	7.9	316	40.7	33	279	8.4	33
	11	6	4	0	10	2.4	298	32.7	10	279	9.7	10
	12	11	5	0	16	3.8	340	54.5	16	287	9.1	16
	13	3	4	0	7	1.7	397	39.1	7	296	4.0	7
	14	1	0	0	1	0.2	318		1	293		1
	15											
	16											
	17											
Sample Total		242	178	0	420	100.0	237	72.1	420	256	22.6	420
3- 9 June	1											
	2											
	3	10	3	0	13	3.1	75	9.1	13	186	5.7	13
	4	4	3	0	7	1.7	121	14.5	7	212	7.5	7
	5	78	56	0	134	32.1	136	19.8	134	220	8.3	134
	6	51	27	0	78	18.7	166	29.5	78	233	10.9	78
	7	19	10	0	29	6.9	199	29.5	29	246	10.8	29
	8	49	44	0	93	22.2	247	35.2	93	261	10.9	93
	9	10	7	0	17	4.1	250	23.5	17	267	8.3	17
	10	12	12	0	24	5.7	291	45.7	24	277	8.2	24
	11	3	5	0	8	1.9	339	50.2	8	291	8.6	8
	12	4	6	0	10	2.4	367	69.7	10	292	14.2	10
	13	2	2	0	4	1.0	317	30.7	4	288	6.3	4
	14	0	1	0	1	0.2	466		1	291		1
	15											
	16											
	17											
Sample Total		242	176	0	418	100.0	194	73.5	418	242	26.1	418

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Appendix A.21. (p. 2 of 2)

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
21 May- 9 June	1											
	2											
	3	13	3	0	16	1.3	76	9.0	16	186	5.8	16
	4	5	5	0	10	0.8	122	15.0	10	213	7.5	10
	5	128	82	0	210	16.8	141	22.7	210	222	8.7	210
	6	105	76	0	181	14.5	177	33.6	181	237	11.7	181
	7	61	40	0	101	8.1	226	42.8	101	254	12.3	101
	8	248	179	0	427	34.1	267	40.9	427	265	10.3	427
	9	48	35	0	83	6.6	290	41.5	83	273	10.0	83
	10	49	47	0	96	7.7	316	43.1	96	280	8.0	96
	11	23	16	0	39	3.1	339	52.5	39	288	12.4	39
	12	26	28	0	54	4.3	370	57.0	54	291	10.7	54
	13	12	15	0	27	2.2	393	49.4	27	296	7.2	27
	14	1	3	0	4	0.3	407	68.9	4	299	8.6	4
	15	2	0	0	2	0.2	392	36.8	2	299	4.9	2
	16											
	17	1	0	0	1	0.1	458		1	312		1
All Samples Combined		722	529	0	1251	100.0	241	82.3	1251	256	25.4	1251
Sex Composition		57.7	42.3									
Unaged		5	3	0	8	0.6	261	60.1	8	264	18.8	8
Sex Composition		62.5	37.5									

Appendix A.22. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Norton Sound District combined, 21 May - 9 June, 1996.

Sample Dates	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
	1											
	2											
	3	17	6	0	23	0.9	76	9.3	23	184	9.9	23
	4	8	12	0	20	0.8	127	18.9	20	215	8.2	20
	5	275	220	0	495	19.6	148	23.4	484	224	10.3	495
	6	204	148	0	352	14.0	182	34.9	334	238	12.4	352
	7	134	73	0	207	8.2	227	44.0	203	254	13.3	207
	8	465	350	0	815	32.3	271	40.2	770	265	10.6	815
All Weeks Combined	9	94	80	0	174	6.9	300	42.3	166	274	10.6	174
21 May - 9 June	10	90	97	0	187	7.4	323	42.8	176	281	9.6	187
	11	49	27	0	76	3.0	349	44.2	71	290	11.9	76
	12	53	46	0	99	3.9	373	51.7	94	294	11.0	99
	13	28	27	0	55	2.2	388	47.3	52	297	9.9	55
	14	6	8	0	14	0.6	393	50.0	8	295	16.7	14
	15	2	1	0	3	0.1	413	44.2	3	306	12.9	3
	16	1	0	0	1	0.0	0		0	320		1
	17	1	0	0	1	0.0	458		1	312		1
All Samples Combined		1427	1095	0	2522	100.0	242	81.8	2405	256	25.7	2522
Sex Composition		56.6	43.4									
Unaged		56	43	0	99	3.9	266	89.7	82	261	24.9	99
Sex Composition		56.6	43.4									